

THE
SOUTHERN AGRICULTURIST.

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PART I.

EDITORIAL AND ORIGINAL.

Observations on the Employment of Salt in Agriculture and Horticulture, with Directions for its Application, founded on Practice. By CUTHBERT WILLIAM JOHNSON. Fifth Edition. London, 1827.

We have received many communications requesting information upon the subject of Salt as a manure. In some remarks already made in our journal, we have alluded to the matter; but as we were then only experimenting, we could not bring many facts to substantiate our positions. During the last season, however, we made several trials with salt, and the result has been, that we are perfectly satisfied of its efficacy as a *stimulating* manure. As a *nutritive* manure, we must here repeat, what we advanced upon a former occasion, — *it will not succeed*. It only acts upon the plant as a stimulant; enabling it to imbibe from the soil those juices which otherwise it would fail to do. Some soils may possess much vegetable matter, which would remain inert, and the plant would fail to receive it as nutriment, without some ingredient to give it activity and efficacy. In most soils, lime does this in an admirable degree,—with us, we have found that salt-mud, salt-water, and common salt, will produce such an effect; and we trust before we finish this article, to satisfy the most incredulous.

lous, that there are facts enough upon record for any man to be satisfied with the position we have assumed.

From the excellent work, whose title heads this article, we make the following extracts :

“ That salt was very early applied as a manure in the East, we have abundant testimony. “ Salt,” said our Saviour, in one of his addresses to his disciples, “ is good ; but if the salt have lost its savor, wherewith shall it be seasoned, it is *neither fit for the land nor yet for the dunghill*, but men cast it out.”—(St. Luke, chap. 14, verse 34.)

‘ Cato says, “ sprinkle your best straw with salt, then serve it for hay !”

‘ Lord Bacon, who died in 1626, recommends its use for the garden.

‘ Sir Hugh Platt, in 1658, bears testimony to its value for grass lands.

‘ Frederic Hoffman, in 1742, and Dr. Brownrigg, in 1748, celebrated its importance as a condiment for cattle.

‘ The farmers in the neighborhood of Padstow Harbor, annually employ nearly 54,000 single-horse cart loads of sea sand, and they are so convinced of the superiority of this salted sand, that they prefer, says Dr. Paris, “ sending four or five miles to the shore to obtain this calcareous sand, which has salt in it ; although, at much less expense, they might procure drifted sand, which does not contain salt, at their own doors.”—(Johnson’s Essay on Salt, page 30, second edition.)

‘ WHEAT.—Salt, it should be remembered, *rarely causes the wheat plant to grow larger or taller*, but it fills up the earth better, and brings the weaker plants forward. We have it on the authority of Mr. Sinclair, that “ salt appears to lessen the produce of straw and increase the weight of grain.” I have never been able in my experiments, or any I have witnessed, to see any increased quantity of straw, even in cases where there was an increased produce by means of salt, of six bushels of wheat per acre.

‘ I cannot enforce this too much upon the attention of the agriculturist. Let not the farmer be deceived by appearances : let him have the salted and unsalted portions, at harvest time, carefully separated and examined by weight, if the plots are small, or measuring will answer if extensive. A few square rods, or even yards of each, will be sufficient ; and I have no hesitation in saying, that

he will find the result highly in favor of salt. But if, on the contrary, after having carefully supplied salt to *half* of the field, he judges at harvest time merely by his eye, in such an unfortunate case, let me request of him, for his own credit sake, not to mention *his experiments* upon salt manure—how carefully he tried it; and how complete was its failure: let him be assured that such modes of investigation, though very common, are worse than useless to the agriculturist—are marks of obstinacy and presumption, to be excused only on the plea of ignorance.

‘Let the salt be applied some time before sowing the seed, not less than ten and not more than twenty bushels per acre.

‘In my own experiments upon a light gravelly soil, at Great Totham, in Essex, the use of twenty bushels of salt per acre, (in 1819) produced an increase of $5\frac{1}{2}$ bushels per acre.

‘The following statement of the result of some trials in 1820, will show how important may be the result to the country at large, by its judicious application. I regret that incessant employment of a very different nature has hitherto prevented my continuing these experiments.

PRODUCE PER ACRE.

	bbls.	lbs.
No. 1. Soil without any manure, for four years,	13	26
2. Soil manured with stable dung, to the previous crop, (potatoes)	-	-
3. Soil with five bushels of salt per acre, and no other manure for four years,	26	52
The soil light and gravelly.	26	12

‘The testimony of a plain Essex farmer may have some weight in corroboration of my own, even with the most suspicious. “The soil,” says Mr. James Challis, of Penfield, “that I described to you to be of rather a loose hollow description, had a dressing of salt put on in November, after the wheat was sown, about 14 or 15 bushels per acre; it produced at the rate of six bushels per acre more than that which was not dressed, and it may be stated to be £1 per load of 40 bushels better in quality.”

‘Another Essex farmer, the late Mr. Baynes, of Heybridge; had his doubts removed by the result of the following experiment—the soil “a sandy clay.”

‘Produce in bushels per acre:

Soil dressed with 15 loads of stable dung per acre, 17½

Soil dressed with 14 bushels of salt per acre, immediately after the seed was sown, - - - 36½

‘It is a custom in most countries of Europe, to apply salt and water as a steep to prevent the ravages of the disease in wheat, called smut: the value of this is known to almost every farmer. Recent experiments have suggested that it may even be of use, when employed in larger quantities, as a preventive of mildew—the most dreadful of the numerous diseases to which the cultivated grasses are exposed. The experiments of the late Rev. E. Cartwright, strongly evidence, that when salt and water is sprinkled with a brush upon the diseased plants, it is actually a complete *cure*, even in apparently the most desperate cases. (See Essay on Salt, page 49.)

“The proportion, one pound to a gallon of water, laid on with a plasterer’s brush, the operator making his casts as when sowing corn: it is instant death to the fungus.” The time and expense is trifling.

‘It appeared in the course of some inquiries made by the Board of Agriculture, that a Cornish farmer, Mr. Sickler, and also the Rev. R. Hoblyn, were accustomed to employ refuse salt as a manure, and that their *crops were never infested with the rust or blight*.

‘BARLEY AND OATS.—Apply from ten to sixteen bushels per acre, just before you sow the seed.

‘Mr. Legrand, a Lancashire farmer, states, “in a sandy soil I can assert sixteen bushels to be a proper quantity for a statute acre; it gradually advanced in its beneficial effects to sixteen bushels, and as gradually diminished to forty bushels where vegetation was stopped.”

‘A Suffolk farmer, Mr. Ransom, of Sproughton, also says, when speaking of his experiments on a light sandy soil, “The Barley thus dressed, *presented no difference of appearance to the rest of the field*, until within a fortnight of harvest; the salted crop was then brighter and about one week forwarder than the rest of the field.” The following are the results when carefully cut and measured—

‘Produce in bushels per acre:

Soil without any manure, - - - - - 30
Soil dressed with 16 bushels of salt per acre, in March, 51

‘TURNIPS, MANGEL WURTZEL, &c.—I select from my latest communications the following from Killerton, in Devonshire. In a letter dated August 26, 1826, Sir Thomas Acland, Bart., favored me with the following state-

ment from his bailiff: "The first experiments I made of salt for manure, was on seven acres of land for mangel wurtzel. I first heaped out the field with earth, forty heaps to an acre, as is usually done for lime: I then put in each heap thirty-three pounds of salt, and mixt it well with the earth, and let it lie a fortnight before I spread it over the land, after that I ploughed the land three times before I sowed the seed, and I had roots there 32 pounds each. Since that time I prepared a field of five acres in the same way for turnips, one-third part of the field with lime, one-third with salt, and the other part with hearth ashes. When the seed came up first, the turnip appeared most promising where the hearth ashes were; but after the first month, the turnips did not grow so fast as where the salt or lime was; after that time, the turnips, where the ground was manured with salt, grew faster, and the green looked stronger and darker, and at the end of the season was the best crop.

"The next year I put the field to barley; and where the salt was put, it was the strongest and best crop. After that time it was a great deal heavier to work; therefore, I consider it a good manure for light sandy soils, but not calculated for clay or heavy lands."

'Mr. Hare, of Beaconsfield, in Buckinghamshire, uses salt regularly. In 1822, on one acre of a large field—the soil very gravelly—he applied about 2 cwt. of salt, without any other manure; the rest of the field was manured as usual. The turnips produced on the salted acre were just as good as on any other part of the field. In the following year, on another field of the same quality, he manured the *whole* field with farm-yard manure, adding to one acre of the field 2½ cwt. of powdered rock salt. On this *salted* and *manured* acre, he had more and finer turnips than was produced on any other field of equal extent in the whole parish. He approves of it also very decidedly for barley.

'GRASS LANDS.—Apply ten or fifteen bushels per acre in the autumn.

'I rejoice to find that in Devonshire salt has found, in Mr. Collyns, of Kenton, an able and zealous advocate. From a letter dated October 17th, 1826, with which I was favored by that gentleman, I make the following copious extract:

“One of my neighbors writes me, in using salt as a manure on grass land: ‘I have found the salted portions not to be affected by severe frosty nights, when every blade of grass on the unsalted portions has been in a frozen state.

“‘I observe, too, that it is destructive to every kind of grub and worm; and I am convinced, where it has been used with judgment, that it has not failed.’ Another intelligent neighbor, continues Mr. Collyns, whose farm is almost entirely a light black sand, writes—‘I have found salt answer my most sanguine expectations for barley, oats, potatoes, and turnips, both as to the increased quantity and improved quality of the crops, of which I can now give ocular demonstration to any one you will send: my barley and oats, which used to yield me only 15 to 20 bushels per acre, now yield from 40 to 45. My wheat is certainly much improved in quality, but I expected more in quantity. I have had 35 bushels of wheat from an acre dressed with ten bushels of salt; and from the same field last year, after the same quantity of salt, 140 bags of potatoes per acre. This year again, dressed with ten bushels of salt, I have not more than 20 bushels of wheat per acre, but the quality very superior indeed, and the root of clover in it is very fine and luxuriant. In every field I have salted, I find the grass very much superior to any produced before the use of salt.’

“‘I have since,’ adds Mr. Collyns, “gone over his farm, and am astonished at the verdant pasturage, in what used to be coarse and rushy meadows. In this arable land he never got more than ten bushels of wheat per acre, until he used salt; so that this is also a decided improvement.”

‘I will give but another testimony in favor of its use, and that one of the latest I have received from an old Suffolk agriculturist, Mr. Brooke, of Capel, near Ipswich:

‘In the month of April, 1821, six bushels of salt manure were applied to half an acre of red clover—the soil good turnip land, not sharp; extent of the field ten acres. The salted clover at first looked very yellow, and apparently injured, but it soon began to recover; and when mown, the increased produce was, at the very least, 10 cwt. per acre; and the aftermath proportionately good, the cat-

tle eating it down closer, and in preference to every other part of the field.

‘**POTATOES.**—Apply from ten to twenty bushels of salt to the surface as soon as the potatoes are planted, or ten bushels in the previous autumn, and ten after inserting the sets.

‘My experiment with salt to potatoes were upon a light gravelly soil. The result was as follows:

Produce in bushels per acre :

1. Soil without any manure, - - - - 120
2. Soil manured with 20 bushels of salt the previous September, - - - - 192
3. Soil manured with stable-dung at the time of planting, - - - - 219
4. Soil manured with stable-dung and 20 bushels of salt, - - - - 234
5. Soil manured with 40 bushels of salt alone, 20 in September and 20 in the Spring, after the sets were planted, - - - - 192½
6. Soil manured with 40 bushels of salt, as in the last experiment, and also with stable-dung, 244

‘These experiments are entirely confirmed by those of the Rev. E. Cartwright, of Tonbridge. From a copious table which the farmer will find at page 82 of my Essay on Salt, I extract the following statement :

Produce in bushels per acre :

1. Soil without any manure, - - - - 157
2. Soil manured with 9 bushels of salt per acre, 198
3. Soil manured with 8 bushels of salt and 30 bushels of soot per acre, - - - - 240
4. Soil manured with 30 bushels of soot per acre, 182

“Of ten different manures,” concludes Mr. Cartwright, “most of which are of known and acknowledged efficacy, salt, with one exception, is superior to them all.”

‘**HAY.**—Put about half a bushel of salt to every load of hay, spread it by hand or through a sieve. Mr. Woods, of Ingatestone, in Essex, has employed it for thirty years ; his plain unvarnished statement need not be supported by any other.

“I use about a quarter of a peck at each laying, thinly spread, which I find is about four bushels to a stack of 20 loads. I am fully satisfied that double the quantity would be much better.

“In a particular wet season, a few years since, I used twelve bushels to a stack of forty loads, the whole of which was consumed by my own horses, and I never had them in a better condition. I am so fully convinced of the benefit of salt to hay, that, while it is allowed duty free, I shall use it in all seasons.” (For other testimonials to the same effect, see *Essay on Salt*, p. 100.)

‘The avidity with which animals consume salted hay, is not so generally known as it ought; I will give, therefore, a curious fact, related to me a short time since by Mr. Lawe, of Reading.

‘Mr. Green, of Wargrave, in Berkshire, had, in the season of 1824, a parcel of sour rushy hay, from a meadow on the banks of the Thames, which both he and his men despaired of rendering of the least value; it was, therefore, stacked by itself, and well salted; the quantity supplied was large, but Mr. Lawe did not know the exact proportion.

‘When the period arrived that his sheep wanted a supply of hay, he directed his shepherd to use the salted inferior hay first, and to his surprise the sheep consumed it with the greatest avidity. The stack being finished, the shepherd was directed to supply them now with the best hay he could find of other stacks of fine meadow hay.

‘He came, however, the next morning to his master, and made the following remark. “We, sir, must have made a great mistake, and forgotten which stack we salted, for our sheep will not eat the hay which we think the best.”

‘**LIVE STOCK.**—The importance of salt to animals is so generally admitted, even by those who deny its value as a manure, that I shall not here dwell at great length upon it. When animals are in a wild state, it is observed, that at certain periods of the year they seek the salt water, or salt springs inland, with great avidity; and every farmer observes, that his cattle, horses, &c., are remarkably fond of licking the salt earth of the farm yard, stables, &c.; and in Spain, they give their sheep salt with great regularity, 128 lbs. in five months to one thousand sheep: as such, I fearlessly assert, that the importance of salt for cattle is incontrovertibly established, however imperfectly it may be practiced. I subjoin the statement of Mr. Curwen, M. P. for Cumberland. He has employed salt to his live stock daily for years:

' For Horses he gives	-	-	6 oz. per day.
Milch Cows	-	-	4 ditto.
Feeding Oxen,	-	-	6 ditto
Yearlings,	-	-	3 ditto
Calves,	-	-	1 ditto.
Sheep,	-	-	2 to 4 per week,

If on dry pastures; but if they are feeding on turnips or oles, then they should have it without stint.

' Some give it to live stock on a slate or stone—some lay lumps of it in the cribs or mangers. There is every reason to believe that if it was regularly given to sheep, they would be rarely affected with the rot.

' Mr. Butcher, now of Brook Hall, in Essex, for years employed salt for his cattle and sheep, on his farm near Burnham, in Norfolk. One of his fields was so very unfavorable for sheep, that, before he used salt, he has lost ten and twelve sheep in a night, when feeding on the turnips; but after he adopted salt, he never lost one. He used to let the sheep have the salt without stint; and he remarked, that the *sheep* always consumed four times the salt *on this particular field*, than when feeding on any other on the farm.

' Mr. Butcher one year let this field of turnips to a neighbor, who did not use salt; and consequently, after losing ten sheep the first night, gave up the field in despair.

' Sir Jacob Astley, of Melton Constable, in Norfolk, gives about a table-spoonful of salt per week to each of his fox-hounds—it keeps away distempers, and preserves them in the best health and vigor. It is administered wrapped up in a paper as a bolus.

' **HORTICULTURE.**—In the garden, much good may be effected by a judicious employment of common salt. I am indebted to my brother, Mr. George Johnson, for several important experiments with salt, in the kitchen garden; they were made with much care, and I can vouch for their correctness.

' The soil was sandy; and I abridge from his paper, read before the London Horticultural Society, in November, 1821, the following detail of the result:

' **WINDSOR BEANS.**—Produce in bushels per acre:

1. Soil without any manure, - - - 135½

2. Soil dressed with 20 bushels of salt per acre,
week before seed time, - - - 217

‘ONIONS.—Produce per acre :

	tons.	cwts.	qrs.	lbs.
1. Soil manured with 20 bushels of salt and 10 tons of farm-yard manure,	3	12	3	12
2. Soil manured with 12 tons of farm- yard manure, - - - -	2	10	2	19

‘CARROTS.—Produce per acre :

	tons.	cwts.	qrs.	lbs.
1. Soil manured with 20 bushels of salt and 20 tons of manure, - -	23	6	1	18
2. Soil, 20 tons manure only, - -	22	18	0	26
3. Soil manured with 20 bushels of salt only, - - - - -	18	2	0	0
4. Soil without any manure, - -	13	4	0	0

‘PARSNIPS.—Produce per acre :

	tons.	cwt.
1. Yard-manure 20 tons, salt 20 bushels,	6	15
2. Yard-manure, 20 tons, - - -	6	11

EARLY POTATOES.—Produce per acre :

	bushels.
1. Soil without any manure, - - -	308
2. Soil manured with 20 bushels of salt per acre,	584

‘I have, in my Essay, given at length the experiments of Dr. Priestly, upon various plants vegetating in salt and water. He found that the use of salt materially protracted the existence of the plant. Flowers, kept in water vases, continue much longer in bloom, if a portion of salt is added to the water. It is a common custom with the importers of exotic plants, to dip cuttings into salt water. Before the adoption of this plan, they almost invariably perished in the passage.

‘To explain these curious facts, it is supposed that the salt acts as a stimulant to the plant. The word stimulant, however, being merely used for want of a better, as most of the amazing processes and wondrous phenomena of vegetable life are too inscrutable but for the eye of Him

“Who spoke the word, and Nature moved complete.”

Among my very last letters received on the use of salt in the cultivation of plants, was one from an eminent flo-

rist, near Paddington, Mr. Thomas Hogg, and I will here transcribe his own words :

“ From the few experiments that I have tried with salt as a garden manure, I am fully prepared to bear testimony to its usefulness. In a treatise upon flowers, published about six years since, I remarked that the application of salt, and its utility as a manure, was yet imperfectly understood. It is a matter of uncertainty, whether it acts directly as a manure, or only as a kind of spice or seasoning, thereby rendering the soil a more palatable food for plants.

“ The idea that first suggested itself to my mind, arose from contemplating the successful cultivation of hyacinths in Holland. This root, though not indigenous to the country, may be said to be completely naturalized in the neighborhood of Haerlem, where it grows luxuriantly in a deep sandy alluvial soil ; yet one great cause of its free growth, I considered, was owing to the saline atmosphere ; this induced me to mix salt in the compost, and I am satisfied that no Hyacinths will grow well at a distance from the sea without it. I am also of opinion that the numerous bulbous tribe of Amaryllises, especially those from the Cape of Good Hope ; Ixias, Alliums, which include Onions, Garlic, Shalots, &c. ; Anemonies ; various species of the Lilly ; Antholyza ; Colchicum ; Crinum ; Cyclamens ; Narcissus ; Iris ; Gladiolus ; Ranunculus ; Scilla, and many others, should either have salt or sea sand in the mold used for them.

“ I invariably use salt as an ingredient in my compost for Carnations : a plant which, like wheat, requires substantial soil, and all the strength and heat of the summer, to bring it to perfection ; and I believe I might say, without boasting, that few excel me in blooming that flower.

“ If I wished to refresh and improve a soil of what is called an old worn-out garden, exhausted by fifty years' cropping or more, I would give it ($\frac{1}{2}$ or $\frac{1}{4}$ part at a time) a good dressing of lime in the autumn, spreading it as soon as it was slacked, and forking it in immediately. I would, a week or two after that, dig and trench it well in the rough, and lay it up for the frost to act upon ; and then in the spring I would give it a good dressing of salt, (not less than six bushels to an acre.) The good effect of such treatment would be manifest for two or three years after.”

The above facts are conclusive; but to them we must add a few others of our own experience. During the last season, we applied salt to our land as follows :

1. In the middle of a sixteen acre field of cotton, we manured one acre with salt, at the rate of one quart to the task row (105 feet). The salt was put upon the list, and immediately after bedded upon. The acre thus manured was formerly a cow-pen, but had been planted three years previous without producing any thing but stalk—this year it produced well for the season, and excelled every other part of the field which had been highly manured with well rotted compost. The appearance of the cotton grown upon it, from the beginning to the end, exhibited a healthy and vigorous growth, and had it not been for the severe storms we encountered, the yield would have been great.

2. On a field of high light soil, cleared late in January last, we applied one pint of salt to the task row, as in the experiments above. That we might test its effect, we left one row in the field unmanured with salt. The contrast was manifest. From the time the cotton came up, to its maturity, that on the salted parts appeared better, and while the unsalted cotton dropped most of its fruit, from the effects of storm and rain, the other suffered comparatively little. New land has been always considered precarious for cotton the first year; we are now of opinion, that if a sufficient quantity of salt is always applied to the same, that a good crop can be calculated upon. We believe no new land in our parish did as well as this.

3. Upon a field of fifteen acres, we applied as in the first experiment one pint of salt to the task row. We planted the land in corn; and though poor, we applied no other manure. The adjoining field of the same quality of land, was manured with green rye, ploughed in. The salted land yielded full five bushels more to the acre than the other.

We must here repeat, that the past season was not one for testing experiments. The several severe storms have placed the best manured and tended field upon a par with the most neglected. So well, however, are we convinced of the beneficial effects of salt, that we shall pursue the system extensively the approaching season, and if spared, we shall note the results for another year.

Embanking and Draining our Low Lands, to prevent Emigration, &c.

Mr. Editor,—You will learn nothing new when I state the tide of emigration still rolls onward to the West—and when *there*, rolls onward still to the “far West;” but it may be useful for you, and each of us, seriously to inquire whether or not, means can be found to induce our people to remain at home, and like the aborigines of our country, cling to the “graves of their fathers.” My remarks are intended for our own STATE, but NORTH-CAROLINA, VIRGINIA and GEORGIA, are not beyond their range, and I should be pleased to see either *take the lead* even of South-Carolina, in measures calculated to arrest the progress of this mania for moving West, this constant draft upon (and consequent diminution of) our strength, labor, and wealth. Every dollar carried for investment in the West—every laborer who moves thither—we may subtract from our *wealth*, and from our power of *production*; both, as regards exchangeable commodities, and successive generations of our kind, to occupy the land. It may be said our population, and agricultural productions increase annually, and I shall not deny it, whether the assertion be fact or mere assumption; but I will ask what proportion does this increase bear, to what it would this moment be, had we so managed as to keep our people at home? It is true what we lose, the West gains,—but may not *we* lose too much? Some of our politicians say not; that if our stragglers establish a new STATE, we acquire an accession of power in the National Councils; and it is true; but only so of the Senate, for the same number of souls returned to the States from which they

emigrated, would give the same power in the lower house. Franklin said a boy paid "too dearly for a whistle;" and I think we may pay too dearly for political influence without obtaining it—may, in the attempt to control the East, establish a power in the West, which will, in the sequel, overwhelm both the East and the South. The solution of that problem is reserved for our posterity however—you and I, will scarcely live to see it. But I have my eye upon it, and I wish to stunt their growth by *low diet*—that is, by withholding from them our money and our labor—for which we get no equivalent in any form. The support they give us in Congress, I treat here as nothing; because their interest is identical with ours, and we repay them with usury. We are jealous of the North and East, but take my word for it, Mr. Editor, we have greater cause to be so of the West and South-West. The West and South-West can produce every thing *our* soil will produce, and some that ours will not; the North and East cannot produce the staples common to the South, the South-West and West, while these three sections can severally produce many of the staples of the North and East. Our *Agricultural Rivals* are to be looked for in the West and South-West—and there only, are the rivals we should dread. We must look well to *them*—look well *at home*, before we can become respectable rivals of the North and East, in commerce. We are too much in the habit of saying "I can't," when we should try at least, to do the thing required to be done. Do you think Sir, Col. Miller, when asked "if" he could take a certain battery at Queenstown, would have achieved that gallant deed, had he said "I can't?" No! as Hickory Responsibility would say, No! by the Eternal, No! Miller, like a brave fellow, modestly replied to his General, "*I'll try, Sir.*" *He did try*, and the battery was won. Now let *us* try. JUPITER swore he would not help the wagoner out of the mud, if he did not help himself; and as Jupiter is not dead yet, we must help ourselves, if we need his assistance—which once given, we must succeed. Our people go Westward in shoals, seeking better lands, carrying with them money, slaves, and horses; and just to the amount of the first, the number in the family, the number and value of their slaves and horses, is our State impoverished—so much wealth; so many producers; so much strength—go from her borders never to return.

Be this amount great or small, we have lost so much of our importance as a State; and to that extent the West is gainer. If I lose my purse, and hear afterward a friend enjoys it, who is the gainer? The West is friendly to us, but the West finds, and grows rich, upon what *we* lose—yet we are not jealous! Why? I might say something about Rip Van Winkleism, but old *Northy* don't like *insinuations*, and it might, if taken to herself by either of the Southern sisters, be like Sinbad's fire—it might wake the fish—only to give me (like him) a bath. But now, Mr. Editor, put on your considering cap, look at the map of South-Carolina; I say nothing about bars and harbors, but I ask—is not the State well watered? Yes sir, it is well watered, and *better watered* than the map shows—not for navigation, but for culture. No finer country—none more easily brought under the control of the husbandman, can be found on this globe. None sir, none! Can the West, or South-West, or even the far famed Delta of the Nile, show better soils for production than our rice lands—or the bottom cotton lands, bordering our chief rivers? No sir, they cannot. It may be asked of us, if you have such good lands, why do your people emigrate? The answer is ready.

1st. The seductive representations of Western lands and profits.

2d. The difficulty, if not impossibility, of small capitalists obtaining, and cultivating our new and rich lands.

These are the reasons alledged, and they cover the whole argument in favor of emigration. Nothing can be reasonably objected against the government price for lands, but it might be well for a discontented man to consider before he sunders ancient ties, &c., the distance, the cost of clearing and settling, the probability of being speculated on, &c., all of serious import. It frequently happens, the emigrant, unaware of the difficulties of the road, and expense of removal, is obliged to purchase a place short of his destination. When he has somewhat bettered his condition, he sells to some other who cannot go farther—to some one, who must send a crop to market the first year; again this one sells to another who is obliged to halt by the way; and this operation is repeated over and over, till the settlement is worn out; each time the last seller going farther West. Frequently it happens, that families are compelled to settle temporarily, and

break up as often, before they can locate to their satisfaction. Many, if not all the emigrants to the West, have been so deceived, that had the truth been all told, they would have remained at home. And it may be safely affirmed, that every man of means, sacrifices before he moves, as much at least as should purchase in the West, land enough for all his force.

My object, however, is not to consider the advantages or disadvantages of migrating to the West, but the means of preventing it, by reclaiming our low grounds, which will be found as fertile as any in existence, in that or any other quarter of the world.

The bottom lands above tide water, adapted to the culture of cotton, &c., and the lands within the influence of the tides suited to the growth of rice, and laying in such bodies as to repay individual enterprise, the labor and expense of clearing, embanking and draining, have almost all been taken up; and large bodies are now owned by persons who, for want of force, do not work them, and yet hold them at such prices, that men of small capital cannot purchase. In numerous instances, large tracts of rich low lands cannot be sold at any decent price, on account of the labor necessary to be expended upon them before any return can be had from the soil. Any one at all conversant with the interior of our State, knows capital only is wanted to bring under profitable cultivation many thousands of acres of as good land as any in the world. To assure yourself of this, you need but look at some of our adjacent Parishes. Ascend the Savannah, Combahee, Ashepoo, Edisto, Santee. Sampit, Black, Pee Dee and Waccamaw rivers, and above a certain pitch of tide you will behold tracts of rich lands in primitive unproductiveness, and which, but for the supply of hoop poles and shingles they can, or do afford, would not be worth the tax imposed on them, trifling as it is. Rivers, falling above tide water into those named, present the same appearance of desolation—a dreary expanse of waste land. Again, off from the rivers and creeks, are lakes, swamps and flats, all exhibiting to the eye the same uninviting aspect, the same abandonment of nature to herself. This was once the condition of our finest cultivated lands, whether above or below the action of tide water. Lands, rivaling in fertility the best in any known region of the earth, have been reclaimed from the wil

derness of woods and water, and by their yield, have elevated us to the rank and importance in this Confederacy, we so proudly and so justly claim. That which has been done, is the earnest of what can be accomplished by the employment of the same means, i. e. *embankments, canals, and drains*. All that has been effected in this way, has been at the cost of individuals, and in this, as in every other undertaking, there is a point beyond which, individual energy and capital cannot go. We have reached that point, and now, public enterprise and capital should be brought into action, to effect that which private interest and industry begun, but cannot complete.

Between the point safe for cotton, &c., and that which is uncertain or unavailable for rice, on account of insufficient rise of the tide, there are immense tracts in the middle and lower parts of the State, which admit of banking at small cost, if done continuously, and which could be made to compare proudly with any section of the Union in the growth of grain, cotton, hay, &c. We do not know the extent of our own resources—we are deaf, and cannot or will not hear the voice of the very rivers. They admonish us our low lands are improving, but all in vain—even speculation slumbers. The rivers year after year confine themselves more and more within their banks, as we all know, or ought to, if we do not. Perhaps some will say the rains fall as usual, and ask why it is so, why are freshets less frequent? To these, if any such there be, it is sufficient to say, the rain falls as formerly, but the face of the country is changed. The axe has felled the forest; the plough, the spade, and the hoe, have broken the sward, and bared the soil to the action of the sun. From these causes, a greater absorption and evaporation of the rains occur, and the former supply of water being withheld from the creeks and branches, they in turn refuse their wonted tribute to the rivers. There is no mystery in the matter, but simple as it seems, the effect has been to enhance tri-fold, some places where thirty years ago, a planter did not calculate on more than one crop out of four, so uncertain were those lands, on account of the freshets. The same causes still operate to lessen the volume of water in our rivers, and as the natural effect of running water is to wear and deepen the channel, we may certainly calculate the cost of embankment and draining diminishes annually. Candor obliges me to state

this fact. But it is no argument against preventing emigration to the West or elsewhere, as we are now situated. If all our sister States were stationary, it would be, and I would urge embankment, &c. *only* as a means of insuring to our people a greater share of health. That "only," is of itself, however, sufficient argument in favor of bringing all our low grounds into culture, for it may be said of health, as of justice, "that it cannot be paid for at too high a price." Some of the rice planters highest up the rivers, already begin to complain of nip tides, but let them not be alarmed, rather advise them to shut the water out and make hay, or cotton, and be comforted with the assurance, that either will pay as well as rice, and that the tide will be nipt annually, and so give them less trouble, to keep up their banks. It is an "ill wind which blows no good." I never heard of that wind yet, and that makes me hope the "ill wind" of emigration, will yet blow good to SOUTH-CAROLINA.

No one can soberly conclude, the vast tracts of swamp and other uncultivated lands in this State, are to continue forever in their present waste and noxious condition. Every one must anticipate a day, when they will be brought under the dominion of man, when "the dry earth will appear, and yield forth abundantly its increase, some twenty, some fifty, and some an hundred fold." But this is the *end*—when is to be the *beginning*? Even now, is as fit a time as any—none better can be looked for. We cannot too early induce our discontented people to forget the West—and this can with ease be done, by employing the idle, and supplying good lands to those who wish them. If our planters and farmers must move with all their substance, in the name of common sense, let it be only from one, to another section of the State. We shall never be in a better condition for commencing a permanent system of bringing into cultivation, all our low lands—a system unremittingly carried out, till every low spot shall be either securely embanked, or properly drained, from the sea-board to the mountains. This will afford employment to all our idle hands; will strengthen ourselves by gaining laborers from abroad; check emigration to other States; and eventually convert our own little State into another Eden. One generation, or other, must commence this mighty work—and why not this one? Why not immortalize our own? The enterprise is not

one of doubtful utility or success ; for it is one which must, in the very nature of things, be some time undertaken, and finished. The Legislature is the only power which can effect this desirable, all important object, and by that body it can be done, in various ways. The lands may be purchased for a small amount, and when embanked or drained, resold on a liberal credit. Or the necessary work may be done, and the amount assessed upon the lands, at the option of the proprietors. The work will require time and money, but the State will eventually be repaid—the health of the country will be improved—and a sturdy, permanent population, will be secured. Emigrants to the West do not seek health, but fortune—for it is a fact well known, the rich bottoms there, as well as here, are unhealthy. If we offer them at home, as good lands as the West can supply, there will be no inducement to remove. They would as willingly undertake here, as there, the herculean task of clearing the land ; and rather, for if removal be necessary, their objects may be answered, without making any material sacrifice, either of early associations, or of property. Our State suffers a continual drain, and if it be not checked and finally stopped, others will grow in wealth and power at our cost, and we shall dwindle into insignificance. We may not actually decrease in numbers, or produce less than formerly ; but if we do not keep pace with our neighboring rivals, the excess of their increase above ours in any respect whatever, is virtually, a deduction of so much strength and importance, from the measure and weight of our pretensions. The evil is at our door, and soon we shall find ourselves unable to compete with our young sisters of the West, if we do not bring into culture, lands as productive as theirs. We have them ; let us use them. Let not all our energies be directed one way—let *Agriculture* share with *Commerce* the fostering care of our Legislature. To promote the interests of the latter, Rail Road, Banking, Shipping, Steam and Insurance Companies have been chartered by that body ; and in a spirit worthy the enterprise, they have subscribed in money, and loaned in credit to the Great Western Rail Road, Three Millions of Dollars. But what have they done for Agriculture ? Nothing—or at most, indirectly, some little may have been done for the line of country through which the road may pass—while the direct tendency is to advance the

interests of agriculture in the West, to enhance to them the value of their produce, and correspondingly to depress the value to ourselves, of every thing we do or can produce, which does now, or hereafter might compete, with their productions. This is the natural operation of things; they go apace with us in commerce—in agriculture they go up, we go down. Quere—What is to be done? Employ and keep our people at home, and by the equally cheap production of all of every thing we want, exclude their overplus from our markets—compel them to send here for sale or exchange, only such articles as we cannot produce, or such as will not enter into injurious competition with our productions. Any other policy is suicidal, originate in whose brain it may. The commerce of this State, to be successful and permanent, must be based on agriculture, steadily and profitably carried out practically, in every and all its branches. It is said of families, they “should buy only what they cannot do without.” It is equally true of nations, that they should buy only, what they cannot produce. Is this our policy? Does our present course look to that end? We have done well in part, let us go the whole—let us take care to lay a foundation fit to bear the superstructure we are about raising. The Legislature must go farther, or all they have done had better not been done. They will have expended great sums catching at shadows, while they run aside the substance. Let that honorable body establish a permanent system of progressive internal improvement—base it upon liberal funds, annually appropriated—establish a commission (or committee) for each section of the State—bend every nerve to the development of our *Agricultural* resources, so far as to fit the land for the husbandman, by banking out and draining off the water from our low (and richest) grounds. Farther than to remove snags, (which should be the duty of the commissioner for that section) let the rivers alone—dispense with the Superintendent of Public Works—and constitute the Commissions of honest practical men, residents of the section in which their duties are to be performed—or what is better still, give to the people of each section the election of Commissioners, who should report directly to the Legislature or the Governor. A general superintendent would be a very useless officer, and though he might be the most honest of all honest men, he would most probably do more mischief

in one year, than would pension him a century—and simply because, not knowing every contractor, while each and all of them would know him, he would be deceived. Contractors, being under the constant cognizance of members of the Legislature, and being immediately amenable to that body, would feel their individual nothingness, and be far more likely to do the people justice. By this course, we will stop the current which sets so strongly to the West, and by judicious encouragement to agriculture in the shape of bounties, we can and shall rank among the most wealthy and powerful States in this Confederacy. If we have not the money, borrow it, let posterity pay the debt, we will pay the interest, if no more—posterity will enjoy the consummation of our plans and labors. Why should they not pay? We are the posterity of those who preceded us—and if Carolina were now an Eden, would not we rejoice, and gladly pay the debt our ancestors incurred to make it so? Mr. Editor, I see you rub your hands while you respond “Yes,” most heartily. Well then, let us bequeath our posterity that gratification, which only the want of power or ability on the part of our progenitors, denied to us. Do not let our ability, our freedom to act, be our reproach.

Yours respectfully,

Y. Z.

The Sweet Potato.

The Sweet Potato being cultivated on every plantation as an ordinary food, we publish below a letter from Professor Hare, to Dr. Tidyman, of Santee, and also, the results of an experiment by Professor Hare, as reported by himself, in 1827, to the “Pennsylvania Agricultural Society,” in order that our planters may be better acquainted with the value of that root.

Philadelphia, Dec. 10, 1837.

My Dear Sir,—I owe you many thanks for your kind letter and the cask of potatoes which you mentioned as having sent. This has been received since. I have made some experiments on some of our sweet potatoes, which

lead me to believe that by dessication they may be preserved for food. When roasted first, and then dried in my evaporating oven, I found them susceptible of being reduced to powder. Of those which you sent me many years ago, some slices which I dried kept for years. I submit it to you, whether it might not be worthy the attention of our Southern planters to extend my observations, and experiments. It might, as I conceive, furnish you with another article of food, of a permanent nature. Agreeably to the experiments which I made some years ago, Sweet Potato Flour ought to be an excellent material for beer.

I am faithfully yours,

ROBERT HARE.

Dr. TIDYMAN.

On the Saccharum of the Sweet Potato, (Convolvulus battatas)
by ROBERT HARE, M. D., Professor of Chemistry in the
University of Pennsylvania.

Dr. Tidyman, of South-Carolina, lately supplied me with some sweet potatoes, of a kind in which the sweet matter is peculiarly abundant, and requested that I would ascertain if there were any sugar in them. Having pared, and by means of the instrument used for slicing cabbages or cucumbers, reduced them to very thin slices; about a pound was boiled in alcohol, of the specific gravity of .845, which appeared to extract all the sweetness, yet on cooling, yielded no crystals of sugar. The solution being subjected to distillation, till the alcohol was removed, an uncrystallizable sirup remained. In like manner, when aqueous infusions of the potatoes were concentrated, by boiling or evaporation, the residual sirup was uncrystallizable. It appears, therefore, that the sweet matter of this vegetable is analogous to molasses, or the saccharum of malt. Its resemblance to the latter was so remarkable, that I was led to boil a wort, made from the potatoes, of proper spissitude, say s. g. 1060, with a due quantity of hops, about two hours. It was then cooled to about 65 degrees, and yeast was added. As far as I could judge, the phenomena of the fermentation, and the resulting liquor, were precisely the same as if malt had been used.

The wort was kept in a warm place, until the temperature 85 F. and the fall of the head, showed the attenuation to be sufficient.* Yest subsequently rose, which was removed by a spoon. By refrigeration; a further quantity of yest precipitated, from which the liquor being decanted, became tolerably fine for new beer, and in flavor, exactly like ale made from malt.

I have computed that five bushels of potatoes would produce as much wort as three bushels of malt; but I suppose that the residue would, as food for cattle, be worth half as much as the potatoes employed.

I believe it possible to make as good liquor from malt in this country, as in England, but that in our climate much more vigilance is required to have it invariably good, principally because the great and sudden changes of temperature, render malting much more precarious. Should the saccharum of the sweet potato prove to be a competent substitute for that of germinated grain, the quality will probably be less variable, since its development requires but little skill and vigilance.

Besides, as it exists naturally in the plant, it may be had where it would be almost impossible to make, or procure malt. Hops, the other material for beer, require only picking and drying to perfect them for use.

They are indigenous in the United States, and may no doubt be raised in any part of our territory.

I have dried in my evaporating oven, some of the sweet potatoes in slices. It seems to me that in this state they will keep a long time, and may be useful in making leaven for bread. They may take the place of the malt necessary in a certain proportion, to render distiller's wash fermentable. The yest yielded by the potato beer, appeared in odor and flavor to resemble that from malt beer surprisingly, and the quantity, in proportion, was as great. In raising bread, it was found equally efficacious.

I propose the word *suavia*, from the latin *suavis*, sweet, to distinguish the sirup of the sweet potato. The same word might, perhaps, be advantageously applied as a generic appellation to molasses, and the uncrystallizable sugar of grapes, of honey, and of malt.

* In passing to this state, there should be a loss in gravity of about four per cent.

Crystallizable sugar might be termed saccharin, since the terminating syllable of saccharum is appropriated in Chemistry to metals.

To JOHN HARE POWELL, Esq.,

Cor. Sec'ry of the Pennsylvania Agricultural Society.

On Selecting Cotton-Seed.

Beaufort, December 14, 1837.

Mr. Editor,—The time is approaching when we all shall be busily engaged preparing for another crop—suffer me therefore to submit for your consideration, and (if thought worthy a place in your register) to planters generally, a few ideas.

In looking over my cotton-seed since ginning, I have been led to think whether, from the quantity of unmatured seed I discovered, it was not worth the planter's while to ascertain from experiment, the injury he sustained from the indiscriminate use of the seed as it came from the cotton. Owing to the gales of the last season, much, very much is premature—of course much of the seed is seriously injured in those essentials which would render it good. If these seed are allowed to be sown, they will germinate—but can it be reasonably supposed the yield would be as great as from the fully matured?

Again, *Mr. Editor*, would it not be worth the attention of all, to lay aside from the product of a fully matured crop, seed for future use, to remedy the evil effects of storms and other causes?

A FRIEND TO AGRICULTURE.

It appears to us an axiom, that with due preparation of the soil, "good seed will produce good fruit." We think the suggestions of our correspondent good, and would advise their being acted on, for after all our labor in putting land in the finest order for a crop, no *safe* calculation can be made, if the seed be not good. The necessity of replanting, might be the least evil resulting from the use of inferior seed.—*Ed.*

PART II.

SELECTIONS.

Letters of Dr. Henry Perrine, U. S. Consul at Campeche, to the Honorable Louis McLane, Secretary of State, on the Domestication of Tropical Plants in the United States.

[FROM THE NEW-YORK FARMER.]

CONSULATE, U. S. A., CAMPECHE. }
February 1st, 1834.

Sir,—The subscriber now presents a brief recapitulation of some facts and arguments, in favor of the *immediate* domestication of Tropical Plants, in the United States. He wishes thus to shew, not merely that the cultivation of tropical staples is *practicable* in our Territory,—but also, that it is absolutely *necessary* for home consumption,—is positively *profitable* for the foreign market, and is highly *desirable*, in other respects, to promote the peace and prosperity of the Union.

The *practicability* of cultivating tropical productions in general, he has manifested with the facts, that the peculiar climate of the tropics extends beyond the astronomical boundary, several degrees North, into our peninsular territory; and that the best plants of the tropics are actually flourishing in the Southern portion of that peninsula, at Cape Florida. He has not only shown that, below 28°, Southern Florida enjoys the dry warm winter—the wet refreshing summer—the breeze by day from the sea, and by night from the land,—and the trade winds from the East, which are *common* to tropical countries in general; but he has also proved, by its narrow level surface stretching South-Eastwardly,—by the hot ocean river running North-Westwardly, along its Eastern shores,—and by the greater steadiness of the Westwardly wind in those latitudes, that Tropical Florida is even *superior* to the elevated Islands of the West Indies, and to the broad Peninsula of Yucatan, in that *uniformity of temperature*, which is most favorable for vegetable growths, animal health, and physical enjoyment. He has moreover not merely shown that in this superior climate of the tropics, are already growing various common vegetables of the tropics, but he has further announced the flourishing condition of the tenderest, and yet most productive plants of the torrid zone,—the Banana plant, and the Cocoa palm, which are universally pronounced to be the greatest blessings of Providence to man; and it may, hence, be considered experimentally demonstrated, that it is practicable to cultivate all tropical productions in the soil of the Southern portion of the Peninsula of East Florida.

The necessity of cultivating tropical productions for home consumption, is shown by the facts, that the *voluntary labor* of the many millions of the *colored races*, spread over the extremely great surface of the whole torrid zone, does *not* create scarcely any *cultivated* tropical productions for extra tropical consumption; that the *forced labor* of the few millions of the *black race*, on an extremely small surface of the **West India Islands**, does create nearly all the cultivated staples for exportation, and, that the forced labor of this black race, with its essential luxuries, the skill and capital of the white race, is becoming greatly reduced by the recent emancipating act of the British Parliament.

According to Crawford, the friend and author of "Sugar without Slavery," the free labor of all the natives in the immense belt of the world, between 30 N. and 20 S. latitude, supplies an annual exportation of about 61,500 tons of sugar,—a quantity which is not equal to the biennial crop of the slave labor of the few negroes in a little district of Louisiana!! Indeed, the greatly superior productiveness of the forced labor of the *colored natives* in *hot climates*, over the voluntary labor of those races in those climates, is doubted only by distant theorists on the false data obtained from the voluntary labor of the *white natives* of *cold climates*; and from the unphilosophical supposition of the equality or sameness of the different species of mankind. Yet, while this undeniable fact unequivocally shows the relative advantage of employing our existing slaves in the cultivation of tropical staples, it is not cited to prove either the positive propriety or the political expediency of the perpetual continuance of our negro slavery. On the contrary, it is expressly admitted that the *free labor of the white race* is so much more productive than either the *forced or free labor of the black race*, that on this account alone it will in time become desirable to transfer all the colored species to their original Africa, and to avail ourselves, even in tropical agriculture, of the voluntary labor of our white citizens alone.

As, then, the withdrawal of European skill, capital and force, from the negro labor of the neighboring portions of the torrid zone, will diminish so greatly the agricultural production of tropical staples for exportation, it has become absolutely necessary to employ American skill, capital and force, on the negro labor of certain portions of our own territory, to create an equivalent supply of cultivated tropical products for the home consumption of the United States.

The *profitableness* of cultivating tropical staples for the foreign market, may be shown with the facts, of the immense superiority of our people and of our institutions, over those of the torrid zone. Our population is composed of the best varieties of the best species of the human genus—combining all the moral and intellectual improvement of the most civilized nations of Europe. Our government is the best in the world, because it is the government of a most moral, industrious, enlightened and enterprising people. On the contrary, the best colored species of the torrid zone are inferior to the worst varieties of the white species of the temperate zone, in the capacities, as well as in the desires, of improving their individual and social condition. Their varied misgovernments are the natural results of an indolent, ignorant, immoral, imbecile, and, consequently, poor population. Possessing very few personal desires, and very little political protection, scarcely any skill, and rarely any capital, however abundant may be the free laborers, and however cheap the free labor, their agricultural products

must continue to be scanty and dear. Even in the nominal republics of tropical America, the agriculture of their Indian citizens very rarely affords an adequate supply for their limited domestic market, or even for their scanty personal consumption alone; and the future unproductiveness of the free negro subjects of the British Islands, may be inferred from the actual desolation of St. Domingo. Our only rivals then, in the cultivation of tropical productions for the foreign market, will be the colonies in which slave labor may remain combined with European skill and capital. Of these, the most formidable is the Island of Cuba; and yet, her population and government are greatly inferior to those of the United States, for prosperous agriculture. The Spanish varieties of the white species of mankind, is notorious for the numerous defects of the national character, institutions, and even religion of the individuals who compose it on both sides of the Atlantic Ocean. The disadvantages for profitable production common to all colonial establishments, hence increase, both in number and weight, in a Spanish colony. The innumerable taxations of most Catholic countries, on the time and money of its subjects, rival, in abusive oppression, the numerous exactions of most Catholic superstition, on the purse and pursuits of its professors. But independently of every other consideration, the exemption of the American planter from the heavy duties paid by Colonial planters, on the extra-tropical productions of the U. States, consumed by their laborers, will enable the former to furnish tropical productions much cheaper for the European market. Even under the disadvantages of soil and climate, in our Atlantic Southern States, their actual cultivated productions of the tropics—their rice, tobacco and cotton, are profitably exported to every portion of the torrid zone itself, in spite of heavy duties and prohibitory laws; and it may be confidently predicted, than within five years, even the sugar of Louisiana will be smuggled into every port of Spanish America.

The *desirableness* in other respects, of cultivating tropical productions to promote the peace and prosperity of the Union, may be shown by a reference to the hostile policy of the governments of the torrid zone, to the present agricultural distress of the Southern portion of our old Atlantic States; to the future probability of employing the free labor of our white citizens, in the agriculture of the warmest sections of the confederacy; to additional considerations derived from the climate and position of South Florida; and to our moral obligations to improve the condition of our country.

The actual condition of the West India trade illustrates, not merely the disadvantages of foreign legislation to our merchants and mariners, but also its still greater injury to our farmers and other creators of domestic products for the tropical markets; as any diminution of consumption in foreign ports not only diminishes the price of the small excess created for exportation, but also of the immense amount produced for home consumption. The fact that the fluctuations in foreign demand cause the ruinous fluctuations in domestic value, is alone an argument for substituting a domestic market; and this substitution has, moreover, become an absolutely necessary measure of self-defence, against the hostile laws of the governments of the torrid zone. Nearly all our most important products, both of Agriculture and the Arts, are either loaded with excessive duties, or entirely prohibited in tropical ports. Even our neighboring Republics of Spanish America will not admit our Northern wheat or Southern rice, unless when compelled by famine; nor our greatest staples of tobacco and cotton, under

any circumstances whatever. As tropical Mexico refuses to take in exchange our corn and our rice, our tobacco and our cotton, we are therefore virtually compelled to cultivate her vanilla and her jalap, and her cochineal cactus, and above all the *foliaceous fibres* of her Henequen Agaves. As tropical Cuba refuses reciprocity to our vessels, engaged in transporting her sugar and coffee to our own ports, we must cultivate enough of both staples, to freight them more profitably in the coasting trade. But even under the most favorable legislation of tropical countries—a perfect and perpetual free trade—our landed and shipping interests may be both more profitably employed in domestic commerce, with the producers of tropical staples in our own territory. It has already been proved, that even our slaves can create cultivated products more abundantly, and much cheaper than either the freemen or slaves of the torrid zone. It is also equally certain, the standard of comfortable subsistence being so much higher in the United States, that even our slaves consume a much greater quantity of extra-tropical products. Hence, a reciprocal augmentation of supply and demand will form a mutually more profitable trade between the colder and warmer divisions of the Union.

The *agricultural distress* of the *sterile* districts of the *old States*, (or Northern and Southern Atlantic States) is principally caused by the cultivation of their common staples in the *fertile* districts of the *new States*, (or Western and South-Western States); and the only agricultural remedy for this distress, will be found in the cultivation of such new staples as are *equivalents to adding fertility to barren soils*.

It is true that the farmers of the cold Northern Atlantic States cannot well compensate themselves, for the superior productiveness of the Western States in corn and wheat, by cultivating the vine and the mulberry; and that hence many are forced to become manufacturers and mariners; but it is very certain that the planters of the warm Southern Atlantic States can more than compensate themselves, for the superior productiveness of South-Western States in rice, tobacco and cotton, by cultivating the cassave jatropha, the cochineal cactus, and the henequen agave; and that the sugar palm on the poorest soils of Georgia, will be more profitable than the sugar cane on the richest loams of Louisiana. As we possess all the soils and climate, with the best people and institutions of the world, we have neither the necessity, nor the desire, nor the power of European agriculturists to force the production of similar plants, in inferior climates and on inferior soils. On the contrary, an American cultivator must select the naturally most productive soil and climate for a given plant, or the naturally most productive plant for a given climate and soil. Hitherto our agriculturists have preferred changing the place of location to varying the object of cultivation; and hence the fertile valley of the Ohio and Mississippi furnishes the cheapest and most abundant supply of our present staples, both for the domestic and foreign market. Although the only formidable rivals of our Western and South-Western cultivators, *are themselves*, they have already reached the extreme of over production for foreign consumption. Our Southern planters, on their inferior soils, cannot hence any longer continue the profitable production of similar staples; and by augmenting the number and capital of South-Western planters, they only injure the latter without benefiting themselves. They must, therefore, seek *new staples* of cultivation in the *naturally most productive plants for their reputed barren soils*. Rich and poor, fertile and sterile, are only *relative epithets* in their ap-

plication to agriculture; and hence the poorest soils for rice and cotton may be the richest soils for cassave and henequen, and the most sterile soils for the tobacco plant and the sugar cane, may be the most fertile soils for the cochineal cactus and the sugar palm. "Palm sugar, not cane sugar, supplies the great consumption of the people of the East Indies, in the poorer and more mountainous countries. As the palms are the produce of poor soils, and the labor is so small and the quantity of saccharine matter from them so great, that palm sugar is produced at about *half the cost* of cane sugar, of the same degree of purity,—that is, for something less than one penny per pound."

Our present tropical staples require a costly, troublesome cultivation; demand a thick vegetable mold; and impoverish the richest soils in which they are planted.

But the future tropical staples of the South will need only a cheap, simple cultivation; will content themselves with bare sandy earth; and will actually enrich the poorest surfaces on which they spontaneously grow. And as our tropical rice, tobacco, and cotton, on equal soils, are absolutely more productive than in their native climates, we may confidently anticipate that our Southern States will enjoy an equal superiority in the culture of tropical cassave, cochineal, and henequen.

Reciprocal prosperity being thus restored, our Southern brethren will cease to calculate the value of the Union.

The possibility of employing the voluntary labor of our white citizens, in tropical agriculture, becomes especially important, from the consideration, that the United States embrace the only portion of the world in which the best laborers and the best institutions can be combined, in the cultivation of tropical productions.

The neighboring mis-called Republics contain four times as many Indian as white citizens; the latter are the least productive variety of the white race, and their governments are mere military anarchies. The neighboring distracted colonies contain a majority of negroes, who, when freed, will expel the whites; and thenceforward, like their Haytian predecessors, they will be productive alone in the propagation of their species. Tropical Asia and Africa cannot endure white laborers, nor free institutions; and Europe has not any tropical climate into which her white laborers can extend. But our Southern States contain already a respectable number of white laborers; and in Florida they will probably outnumber the negro laborers. The slave States, in their own time and manner, will eventually emancipate and transport all their colored laborers; and we shall then present to the world, the only possible example of tropical staples created by the most productive species of mankind, under the most favorable form of government on earth.

The additional considerations derived from the climate and position of South Florida, embrace the retention within our borders of those fellow-citizens who annually leave it to locate themselves, or to perish in foreign countries. Texas and Cuba are constantly attracting our agriculturists, who soon sorrow for the happy institutions of their Fatherland, and who will return when the existence of a superior tropical climate in Southern Florida shall become generally known.

The South of France and of Italy have hitherto invited our invalids to perish in the great vicissitudes of their changeable climates, but hereafter they will seek for health in the unrivalled uniformity of

temperature, and advantages of position, presented by the tropical extremity of our Peninsula.

Our moral obligations to improve the condition of our country, are based on the unparalleled combination of advantages with which it has been favored by Providence. With the most favorable form of government, and the most productive varieties of the best species of the human race, we have all the soils and climates of the earth; and the consequent ability to cultivate most profitably all the most valuable varieties of the best species of the vegetable race. It hence becomes our duty to combine within our territory the creation of the greatest possible amount and variety of cultivated vegetable products for the physical enjoyment, not merely of our own citizens, but also of the inhabitants of all extra-tropical countries, and probably even of the natives of the torrid zone itself. It has been demonstrated, that with a natural equality of soil in even our extra-tropical climates, our slave labor can create cultivated tropical products much more abundantly and cheaply than either the free or slave labor of the colored natives of inter-tropical countries; that many articles of tropical culture, instead of deteriorating, become more productive beyond their native zone; that we may ultimately apply the still more productive free labor of our white citizens to the cultivation of tropical staples; and that such laborers, under such institutions, cannot be devoted to tropical agriculture in any other part of the world. The great equatorial current of the ocean, after cutting off New Holland from Asia, wearing its way round Southern Africa, and being reflected by tropical America, brings to our shores, under the name of the Gulf Stream, the accumulated heat of the torrid zone, to encourage our cultivation of the valuable vegetables of that unproducing belt of the globe. The white population on its borders will soon be forced to embark on its bosom for the United States. Once entirely abandoned by the skill and capital of the white species, the colored species will not furnish an adequate quantity of even uncultivated products for extra-tropical consumption. Even logwood, mahogany, and other wild materials for the arts, are diminishing every day. The Peruvian bark, sarsaparilla, and other spontaneous medicines, are also vanishing, and noxious substitutes are exported to kill, instead of cure, our fellow-citizens. If, therefore, we do not *speedily* naturalize *all* useful tropical plants in tropical Florida, they will soon disappear from the surface of the world.

I have the honor to be, Sir,

Your obedient servant,

HENRY PERRINE.

To the Honorable LOUIS McLANE, Secretary of State of the U. S. A.,
Washington City.

CONSULATE U. S. A., CAMPECHE, }
February 20th, 1835. }

Sir,—As an appendix to his communication of the 1st inst., the subscriber avails himself of the only statistical data in his power to *demonstrate* the greatly superior productiveness of slave labor in the United States over slave labor in the West Indies.

British West India Colonies, 692,700 slaves, 427,392,000 sugar, and 19,769,500 coffee exported.

Spanish Island of Cuba, 286,942 slaves, 162,703,425 sugar, and 42,971,625 coffee exported.

Louisiana, 109,631 slaves, 70,000,000 sugar, and 72,000,000 cotton exported.

Now, admitting for a moment that the culture of cotton is merely equal to the culture of sugar and coffee, as 109,631 slaves produce 142 millions of sugar and cotton in Louisiana, in the same proportion, 692,700 should produce 897 millions of sugar and coffee in the British West India Islands: and in the same manner, 286,942 slaves should produce 371 millions of sugar and coffee in Cuba.

But the former do produce only 447 millions, and the latter only 205 millions, together 692 millions, instead of the 1268 millions which they should produce in proportion to Louisiana. But the truth is, that the relative value of labor of the production of cotton, is at least fifty per cent. more than the value or labor of the production either of sugar or coffee; and hence the combined 979,642 slaves of British West India Islands and of Cuba, should yield 1590 millions! instead of 672 millions of sugar and coffee, every year, for exportation; or in other words, with an equal number of slaves, Louisiana would supply the consumption of the world!!

To obtain the details of the relative productiveness of a single negro, the following estimates are presented of a sugar plantation in Louisiana, and of a sugar plantation in Cuba, each assumed to yield annually 400,000 pounds of sugar.

The first are contained in the report of the Agricultural Committee of Baton Rouge to the Secretary of the Treasury, against the reduction of duties on imported sugar, and must hence be presumed to present the most unfavorable aspect of the cultivation of sugar in Louisiana. The second is taken from pages 108-9, of the Statistical History of Cuba, by Dr. Ramon de la Sagra, who presents the most favorable aspect of the cultivation in general of the staples of that Island. The first diminishes the average product of an acre in Louisiana, to 1000 pounds of sugar. The second exaggerates the average product of an acre in Cuba, to 2038 pounds of sugar,—although he had previously admitted that Humboldt was correct in limiting it to 1116 pounds the acre, or 1500 arrobas the caballeria.

The Louisiana plantation is stated 1200 acres= \$50,000; improvements= \$50,000; negroes 80, at \$600 each,= \$48,000; total 148,000 dollars.

The Cuba plantation is allowed only 30 caballerias, or 981 acres,= \$54,000; improvements= \$65,490; negroes, 90, at \$400 each,= \$36,000; total, 155,490 dollars.

Of the Louisiana plantation, *one third*, or 400 acres, is cultivated—giving to each negro five acres, and 5000 pounds product in sugar.

Of the Cuba plantation, *one sixth*, or 196 2-10 acres is cultivated, giving to each negro 2 18-100 acres, and 4444 4-9 pounds product in sugar, i. e. 555 5-9 pounds *less*.

The proportion of the annual expenses of the whole plantation is, for the negro in Louisiana, only 105 dollars,—while for the negro in Cuba, it ascends to 151 48-100 dollars; i. e. 46 48-100 dollars *more*.

Hence, although the slave in Cuba may cost 50 per cent. *less*, and the ground he works may produce upwards of 100 per cent. *more*, the slave in Louisiana, both positively in sugar and negatively in money, may gain for his master upwards of 100 per cent *more*!! *

Without reference to the *price* of the sugar, or of the coffee, or of

the cotton, it may, in the same way, be shown, that on *inferior soils*, even our slave labor will create much greater quantities at much less expense!! But when we admit the soil and climate to be *equally* productive, how infinitely superior are the products of American *skill*, capital and *economy*, combined; and when we still further contemplate the *greater* productiveness of most articles of tropical culture, acclimated within our territory, we may safely anticipate that within twenty years, the Southernmost sections of our Union will yield every tropical staple for the consumption of even the torrid zone itself.

I have the honor to be, very respectfully, sir,

Your humble and ob't. serv't.

HENRY PERRINE.

To the Honorable LOUIS M'LANE, Secretary of State of the U. S. A.,
Washington City.

Limestone, ground, but not burned, for Agricultural purposes.

[FROM THE WINCHESTER REPUBLICAN.]

The following paper, on the use of *Limestone ground*, instead of *burned*, for agricultural purposes, was read before the Lyceum of Natural History of New-York, by Wm. Patridge, Esq.

The facts therein set forth, are highly important, and worthy of being tested by those who have limestone on their farms. We ask for this subject, the attention of our readers, and of those who have heretofore tested or may hereafter test, the theory by experiment, to furnish us a statement of the result for publication. We shall also be much obliged to Mr. Patridge for a continuation of his favors.

To the President of the Lyceum of Natural History.

SIR,—In a conversation I had with you on board a steamboat on the North river, sometime during the summer of 1835, relative to lime as applied agriculturally, I mentioned the advantage of using it generally in a ground state, as plaster is now used, instead of burning it. You informed me, subsequently, that your farmer had applied some on your land in a state of powder, and found it decidedly beneficial. I then promised to send you my written opinion on the subject, and I now beg leave to fulfil that promise with an apology for delaying it so many months.

It is well known to every intelligent agriculturist, that soils covering limestone rocks are the most productive of any on the globe. I know of but one exception, when the limestone is too highly charged with magnesian earth. Our country affords many facts in proof of this assertion. I shall refer to two locations as all sufficient for my purpose. The State of Kentucky has a bed of limestone running underneath its whole surface, and its natural soil has been produced, and is still producing by the abrasion of those rocks. The superior productive powers of the soil of the State, is well known to every intelligent farmer in our extensive country, and is spoken of in terms of admiration by Europeans. That part of Pennsylvania extending from the Lehigh Water Gap to Easton, is a limestone country, and affords another instance of its highly productive powers.

In England, the soils deposited in valleys at the foot of limestone hills, are equally productive. The valley running from the city of

Bristol to the city of Worcester, is of this description, and there is no soil more productive in Great Britain. There are more than twenty spurs of hills abounding that valley, each containing large bodies of limestone rock, and the springs flowing from them are so charged with limestone, as to incrust every thing lying in them. When the springs issue from the rocks high up the hills, they are much used for irrigating the higher lands, and the beneficial effects are visible to every observer.

Lime, in the state of Chalk, is also used very generally on land near to the Chalk Mountains in England.

The lower part of this State abounds in primitive limestone, and the preceding observations were made with a view to apply the facts to rectify a material error committed, as I conceive, by the farmers in using it on their land. They burn the limestone at considerable expense, and in that state use it for agricultural purposes. I would suggest, as a far better general application, that the limestone be merely ground, and in that state applied to the land. As this may be a new mode of application, I shall endeavor to shew wherein it is preferable to the present.

I have been frequently informed by farmers who use burnt lime on their land, that they keep it some months before using, and that then the good effects are not observed the first year. We have only to ascertain what these facts prove, and the whole mystery will be instantly solved. In burning limestone, two materials essential to agricultural productiveness are driven off, its water and its carbonic gas. In its natural state, it is a carbonated hydrate, when burnt it is caustic lime, (oxide of calcium) made so by the heat driving off its water and carbonic gas. Why does the farmer delay putting it on his land, but for the simple reason that it is too caustic for vegetation. Why does it require to lie in the soil one year before producing any visible fertilizing effect? It is for nothing more than to give it time to return again to a state of carbonated hydrate, the same condition it was in before burning.

I have said that limestone merely ground is the best general mode of applying it to agricultural purposes; there are some exceptions to this rule. When a soil contains "hard roots, dry fibres, or other inert vegetable matter, a strong decomposing action will take place between burnt lime and the vegetable matter, rendering that which was before comparatively inert, nutritive." Where this is the case, it would be well for the farmer to use one third burnt lime, and two-thirds of ground limestone, or any other proportion he may find most efficacious. For stiff heavy soils, use the limestone coarsely powdered, for in this state, after being well ploughed and harrowed, so as to mix thoroughly with the soil, it would so lighten it as to enable the sun and air to penetrate to the roots of its vegetation, thereby rendering the future crops more productive. For lighter soils it cannot be ground too fine. Our primitive limestone rocks are peculiarly well calculated for this purpose, as the particles are held together by a loose aggregation, and therefore easily reduced to small pieces, or to fine powder, at the option of the operator.

The question was asked, by a writer in a late New-York Farmer, "if it be possible that ground limestone can answer the purpose of plaster of paris?" I should say that it can, and it may be, eventually, to a better purpose. The fertilizing property of plaster depends mainly, if not altogether, on its hydratic property, that is, on its power to

attract moisture during the night, and imparting it gradually to the plants during the day. The carbonate of lime possesses the same property in a considerable degree. I have never heard of these two limestones being analyzed, for the purpose of developing their comparative powers of absorbing moisture from the atmosphere, and their facilities of giving out their moisture at atmospheric temperatures. To have this accurately performed, would be a desideratum with agriculturists.

We know that soils formed by the abrasion of limestone rocks, are of the most fruitful description: we see its productive powers when land is irrigated with equal effect in the state of chalk. Science has developed the properties on which this productiveness depends, and if our farmers would suit their appliances scientifically, we should not now be receiving a supply of agricultural products from Europe.

Facts in the Science of Agriculture.

Lime.—If quick lime, either fresh, burned or slaked, be mixed with moist vegetable substances, however hard and fibrous, it soon destroys their texture, and forms a mixture, the greater part of which can be dissolved in water, thus rendering what was previously useless, fit for food of plants. [Hence the utility of applying quick-lime to reclaimed swamps, or other soils abounding in wooden fibre.]

On the other hand, it is injurious to mix quick lime with vegetable substances, already soluble in water, or with any sort of dung, or other animal manure, lest it should take up too much humic acid. [Humic acid may be termed the *essence of dung*, combined with oxygen.]

Sugar and gluten.—There are few plants that do not contain sugar, which chemists have shown to be a compound of about three parts carbon, four parts oxygen, and eight parts of hydrogen.

It would follow, therefore, that it is not necessary to be introduced into the soil in the state of sugar, the constituents being always more or less contained in water, and most probably combined into sugar after entering the system of a plant. This applies also to starch, which is composed on the same principles, and may indeed be converted into sugar, as was lately discovered; and gluten differs only in containing nitrogen. [Gluten is the substance which imparts nutriment to wheat in a greater degree than is possessed by other grain.]

Flavor, color, &c.—All flavor, color, smell and nutritive qualities, depend for their production chiefly on the action of light. The red color of forced rhubarb, (and of the blood beet) which seems to be an exception, arises from the red matter previously produced by the agency of light being carried down to the root. [Hence, celery is blanched to divest it of its otherwise acrid taste—and hence fruits growing in the deep shade, are more vapid and colorless than those growing in an open exposure.]

Heat.—The soil of this country, below where the frost usually penetrates, averages a temperature of 48 degrees, or 15 degrees above freezing, which is the reason why springs do not freeze, and not any quality in the spring water, which will freeze readily enough when taken from the well. [And this explains why spring water, retaining always near the same temperature, appears cold in the heat of summer, and warm during the cold of winter.]

Radiation is the spreading of heat, which arises from heat passing from a hot body to a colder one near it, as uniformly as water runs down a slope. This spreading of heat takes place between the surface of the ground and air; and when the air is cold, though the soil be warm, it soon loses its heat, and dew or hoar frost is formed on the grass, by the moisture diffused in the air, though previously invisible, becoming condensed or frozen. But when the sky is covered by clouds, this spreading and loss of heat is, in a great measure, prevented, and hence there is no dew or hoar frost on a calm cloudy night. It is on this principle, that garden plants are protected by matting, which stops the heat of the soil from spreading about and being lost in the air. Dr. Wells proves this by stretching a very thin cambric handkerchief, two feet square, six inches above a grass plat; and he found on one night, that it was five degrees warmer under the handkerchief, than on the rest of the grass plat; and on another night, there was eight degrees of difference. The screen should not touch the soil, or the plant to be protected. In this case it might carry off heat by conduction.

It is on the same principle that snow affords a protection from the severity of frosts, the plants under snow having been found, by Dr. Darwin, to indicate forty degrees, that is eight degrees above freezing; hence some Alpine and Siberian plants, do not bear exposure to frosts when unprotected by snow, so well as those which are natives of a warmer clime.

A reason for a slope of a hill being warmer than a valley, is, that cold air being heavier than warm air, the coldest air always rolls down to the lowest situation; but if there be a brisk running stream in a valley, it will prevent, in some measure, the stagnation of cold air; injurious, because the greatest cold always occurs in air having the least motion. Prof. Daniel says he has seen a difference of 30 degrees on the same night, between two thermometers, one placed on an elevation, and another in a sheltered situation. Daniel also states, that the same surface, which in a calm state of the air, would give off 100 parts of moisture, would yield 125 in a moderate breeze, and 150 in a high wind.—*Prof. Rennie.*

Advantages of Fall Ploughing.

[FROM THE MAINE FARMER.]

MR. HOLMES,—I believe that the advantages of fall ploughing land intended for spring crops, cannot be too strongly urged upon the attention of practical farmers.

By the practice of fall ploughing, the farmer is enabled to take advantage of the most favorable season to get in his crops. In this Northern region, this is truly a great advantage. The difficulty of procuring labor, and the uncertainty of the weather, often make it extremely difficult to perform this necessary operation so early that the crop may be got in, and receive the full advantage of the season, when our dependence is placed entirely on *spring ploughing*; in consequence of this delay, many crops are injured or destroyed. This point is sufficiently obvious to every farmer.

The weather is quite as favorable for ploughing in the fall, as at any other season of the year—and the team is in as good condition; and

while the ground is open, every opportunity should be improved in thus forwarding the spring's work.

Another advantage of fall ploughing, is in the destruction of insects, and preventing their ravages. A piece of wheat was pointed out to me last spring, on ground occupied the year before by corn, and in equally good condition. The seed wheat received the same preparation—was sown at the same time and by the same person; yet there was a marked difference in the appearance of the grain: one strip of which was quite thin, while the rest was the reverse. I inquired the cause, and was told that owing to the lateness of the season, and the freezing of the ground, one "land" was not ploughed in the fall; the other part of the field was fall ploughed. This fact accounts for the difference in the grain; for on the spring ploughed land was the thin, inferior grain. The injury was probably done by worms.*

Among the many remedies and preventives which have been proposed to destroy the *Grain Worm*, or lessen its ravages, the *Plough* seems to be almost entirely overlooked; yet if the judicious use of that instrument will not prevent the increase of the worm, I cannot tell what will.

The worm was observed by many farmers leaving the grain, while in the field; and by examining the straw and harvested grain, very few of them can be found—and those few appear to be dead or disabled. It seems evident that the greater number, which left the head in the field, (as they appear ill-calculated for making long journeys) take up their abode among the stubble, or in the ground, where they remain through the winter, in a torpid or inactive state. Ploughing in the stubble, immediately after the wheat is taken off, or later in the fall, I think cannot fail to have the effect of destroying many of them, as well as other insects. If the insects burrow deep in the ground,—yet not beyond the reach of the plough,—they will be turned up near the surface, and destroyed by the freezings and thawings of winter and spring; if they remain near the surface—among the stubble or the roots of the grass—they will be turned under and buried so deep that they cannot find their way out in season to do mischief, if ever. To all insects that burrow in the ground, a rout by the plough cannot prove otherwise than disastrous, after they have retired to "winter quarters."

If this view is correct, it will be seen that the common method of seeding to grass with the wheat, and not ploughing under the stubble, is calculated to give the wheat worm a fair chance to infect all succeeding crops. For if allowed to survive the winter, and emerge a fly, its wings will bear it to the neighboring wheat fields, in which it deposits the egg—produces the worm—and thus, if unmolested, increases a thousand fold yearly.

Then, to rid ourselves of this minute but formidable enemy, when we seed to grass, we must substitute some crop not liable to be injured or infected by the worm, instead of wheat;—and plough under the wheat stubble, WITHOUT RESERVE, till the worm is exterminated.

* A writer in the Farmers' Cabinet says—"Fall or very early spring ploughing, does, in some way, prevent the cut worm from injuring our corn crops." If so, there is no necessity for the general complaint that corn crops are injured by this worm. Very early spring ploughing in Maine, however, does not seem early enough to effectually destroy the worm, whatever it may do in Pennsylvania; and we therefore give the preference to fall ploughing and winter fallowing.

To do this, is in the power of every farmer ; and I would ask for it your consideration, and a *fair trial*.

October 3d, 1837.

Experiments in raising Lucerne.

[FROM THE ALBANY CULTIVATOR.]

We find in the Transactions of the Society for the promotion of Agriculture, &c., two communications from Chancellor Livingston, giving the details and results of fourteen experiments made in the culture of lucerne, upon various soils, and in connexion with various crops. The results were various. In some cases the produce was estimated as high as six tons four cwt. the acre in cured forage ; and five crops were taken in a season, two to feed green, and three as hay. In other cases, upon stiff or wet soils, or with grain that lodged, the results were unfavorable. These experiments enabled that intelligent gentleman to lay down some definite rules for our guidance in the culture of this valuable crop, and among them the following :

"1. Never to sow on ground that is not perfectly pulverized.

"2. Not to sow till the earth has acquired a degree of warmth friendly to rapid vegetation, that is, not earlier than the month of May.

"3. To sow with no crop that will probably lodge.

"4. If sown with buckwheat, to apply no gypsum or other manure till the buckwheat is off."

The first course of experiments was made in 1793. The Chancellor closes this communication with expressing his opinion, that lucerne is better adapted to our climate than clover ; that it exacts no more labor ; that it leaves the soil much better than it found it ; and that it is perennial in its duration—having remarked two plants in a common pasture, which has defied the bite of cattle for upwards of twenty years.

The second communication details his experiments in 1794, and closes with further suggestions as to the habits and best mode of cultivating the lucerne, viz.

"That it appears to be full as hardy as clover, but like it, to delight in a warm dry soil, though it will flourish in a moist clay, subject, however, to the same casualties in open winters, when both will be thrown out by the frost.

That "when very young, it requires a natural or artificial warmth in the soil, otherwise it languishes, and when the weeds and natural grasses come up, it is unable to contend with them. That it should be sown in a warm soil, in tolerable heat ;" that he should prefer for it, ground that had been manured and bore a potato crop the preceding year. That the seed may be sown the first of July. That if the crop becomes yellow, it should be immediately mown, and that it will come forth again free from disorder. That the time for cutting for soiling, is whenever it will fill the scythe—should be cut the first year, to destroy weeds. That it may be fed down by any kind of cattle with as much safety as clover, &c. He urges upon young farmers not to be discouraged in its culture by older ones, who tell him they have tried it, and that it will not do ; and to persevere, and they will succeed in rendering it profitable.

We have had considerable experience in raising lucerne during the last sixteen years. Until recently, we have found it a valuable crop, having been enabled to feed six or seven cattle upon an acre of it during the summer months. For two or three of the last years, our efforts to cultivate it have been less successful, on account of the severity of our winters, which has destroyed many of the plants, and of the vexatious intrusion of other grasses, particularly of the spear-grass. [*Poa pratensis*.] We think a potato or a ruta бага crop, manured and kept clean, is the best crop to precede lucerne; that it should not be sown before the middle of May; that there should be 16 pounds of seed sown to the acre, and that if put in broad cast, winter rye, at the rate of a peck to the acre, is the best grain to sow with the seed of the lucerne. We design to make an experiment in cultivating it in drills, the mode generally adopted in France, and to keep the crop free from weeds and grass with the cultivator, for which Van Bergen's machine is admirably adapted, by merely taking out the forward and central share, and dispensing with the wheel.

Comparison of Horses and Oxen—Estimate of the worth of Corn-stalks as Manure.

[FROM THE FARMER'S REGISTER.]

I observe that in your last number there is a letter to you from Mr. Burfoot, mentioning a passage in Sir John Sinclair's 'Code of Agriculture,' in which a paper on horses and oxen, by the late President Madison, published in the *American Farmer*, is mentioned with approbation, as well as two papers published in that work from G. W. Erving, and T. Pickering, on the same subject, and requesting you to publish these writings in your Register, to which you add a note that they shall appear in your next number.

Mr. Madison's paper, as it is called, is no doubt his address to the Agricultural Society of Albemarle, on various topics of husbandry—a respectable essay certainly, and written in a style of purity and neatness that generally belongs to Mr. Madison's writings. It contains some very good advice to cultivators, but I think a number of errors, which is not extraordinary, considering that Mr. Madison's time was engrossed by public affairs. That part of it which relates to the comparative value of oxen and horses in cultivation, I think the most strikingly erroneous, and I rather believe that you yourself would regret to find that Mr. Burfoot, or any other respectable farmer, should be led away by it, to discard the use of horses, and substitute that of oxen. That both are valuable in their places, I have no doubt; but for the main objects of husbandry, on a wheat and corn plantation, I think horses, beyond all question, preferable. As Mr. Burfoot has referred you to the '*American Farmer*,' I would ask your attention to the latter part of a letter to the editor of that work, vol. 2d, p. 140, which presents such views as I have always had on this question, though perhaps rather more favorable to oxen than they ought to have been; still I think them in the main correct.*

It would be a remarkable and extraordinary fact, that Sir John Sinclair and Arthur Young, who have both written a great deal on

* The article referred to will be copied below.

agriculture with ability, and have given much useful information to farmers, should have taken up the question in favor of oxen with so much zeal, in opposition to the general and almost uniform practice of the most judicious cultivators of the soil in both England and Scotland, were it not understood that neither of them was considered a good practical farmer. The point, so far as I understand, is now settled in England, as well as Scotland; and horses are employed for all kinds of labor that requires long and severe exertion, though oxen are occasionally used with advantage for short distances, with frequent interruptions to load and unload.

In Virginia there may be examples of active and successful husbandry on grain farms, where oxen are used instead of horses, for the principal crops; but I have never met with any such on farms of a good size; and am willing to believe, and indeed to hope, that no material change in this respect is likely to take place among us.

Observing in your Register, various and contradictory opinions on the value of corn-stalks as a manure, I will offer my views of the subject; they are probably of little or no value, but you can take them for what they are worth.

That the corn-stalk is of some value by itself for manure, I have no doubt, as it is a vegetable substance; but I should rank it very low in the scale of vegetable manures, if it were turned in, or spread on the soil, in its natural state; still I consider it as a highly valuable manure, when used as it is by the most judicious farmers of my acquaintance. In a farm pen, with a good clay foundation, hollow in the centre, corn-stalks hauled in from time to time in the winter season, and trampled by cattle, become saturated with the urine, and more fluid dung; and in this way, a single light load of corn stalks may be converted into several heavy loads of rich manure. 'Tis true the stalk itself furnishes but a small proportion of this substance, but as much the greater part of it consists of a pith that absorbs fluids like a sponge, and, as I think, in a considerably greater degree than straw, leaves, or any other vegetable substance that can be used for the purpose, it is in proportion more valuable. In England, Flanders, and other well cultivated countries in Europe, we are informed that fluid manures from cattle, are carried out in casks for irrigating their lands, and sand and earth are frequently carried into farm pens, that they may become impregnated with this kind of manure, and then spread on their lands. I think corn-stalks unquestionably preferable for this object, and indeed am so partial to them, employed in this way, that I verily believe if two grain farms were equally well managed in other respects, one of them with, and the other without the free use of corn-stalks in the farm pen, the former might be in an improving, and the other in a declining condition. My notions on this point, may be carried too far, but I think it unquestionable that, used in this way, corn-stalks are a most useful and convenient vehicle for a highly valuable manure.

Extract from the American Farmer of July 28, 1820.

"This subject brings to my recollection the opinion of another foreign writer of great celebrity, upon a question that has been much canvassed in your paper, whether horses or oxen are preferable for the plough? In the middle States, horses I believe are very generally employed, while in New England oxen are almost universally

preferred, and most of the writers whose opinions are given or quoted in your paper, are in favor of the latter. In England, while the cultivators of the soil very generally use horses, most of those who write on the subject condemn the practice, and strongly recommend the employment of oxen. In the old edition of the French Encyclopædia under the article *Fermier*, is an essay by the celebrated *Quesnay*, (who has been called the "*Father of the Economists*," and to whom Adam Smith is said to owe many of the principles contained in his '*Wealth of Nations*,') in order to prove that horses are greatly preferable in agriculture to oxen, and that the general use of the latter in France is a public misfortune, occasioned by the poverty of the farmers. The subject is treated at large, and as might be expected, with much ability, and there are arithmetical calculations showing clearly, if the *data* are admitted, the great superiority in nett profit of horses. I do not send you a translation, as well from the want of leisure, as because it might occupy too large a space in your paper. The work no doubt can be met with in Baltimore. My own opinions on this subject are of no authority, and are probably of no value; but I am strongly inclined to think that the practices in France and in England, in the wheat country of the middle States, and in New England, although opposite to each other, grow out of the situation of these different countries, and their inhabitants. In the greater part of France, oxen were used from necessity; the *metayers*, or *farmers on shares*, by whom the lands were generally cultivated, having too little capital to provide horses. In England, where there is no want of capital, the farmers prefer horses, as though they cost more, and are maintained at a greater expense, they do much more work, and, on the whole, yield a greater profit. In the New England States, there being much more land occupied in pasturage and meadow, than under the plough, they have large stocks of cattle, and little or nothing is lost by working their steers till they are of a fit age for the slaughter house; and the plough being subject to frequent interruptions, and a slow draught through an uneven soil, encumbered with stones, oxen are peculiarly fitted for that work, while in the wheat country of the middle States, where a large proportion of the lands must be subjected to the plough at particular seasons, and within short periods, horses are generally much more useful for this purpose than oxen. Indeed the form and action of the horse, compared with that of the ox, would leave little doubt of the superiority of the former, wherever strength and long-continued exertion should be wanted. Most of the calculations which go to show that oxen are preferable to horses, proceed on the admitted fact, that an ox costs less than a horse, and is maintained at a smaller expense; but I think without a sufficient allowance for the greater number of the former that must be employed to do the same work, and the additional number of hands that they require. Still there are various uses to which oxen may be employed on grain farm to advantage, as in hauling wood, grain, hay, manure, &c., when the draught is slow, and frequent interruptions to load and unload afford time to rest; and when not wanted for other purposes, they may occasionally be employed with the plough or harrow; but any judicious and active farmer, preparing in the hot months of August and September for a large crop of wheat, on lands free from roots and stone, I believe would have very little hesitation in giving the preference to horses on a fair comparison. These loose hints are hastily thrown together, you will make whatever use of them you may think proper."

Comparative Value of the Horse and Ox for Farm Labor.

[FROM THE GENESEE FARMER.]

It has long been our impression that farmers made a serious mistake in their domestic economy, by substituting to so great an extent, horses for oxen, in performing the labors of their farms. We admit that a span of horses will do more in a given time than oxen; that to most farmers it is more pleasurable driving horses than oxen; and that for some kinds of business, such as carrying to market farm produce, the aid of horses is indispensable; yet after these admissions we still ask, is such a general substitution profitable?—for this is the standard by which a farmer should regulate his domestic and farming concerns. We think it is not; and shall give some reasons for our belief.

That a span of horses fit for labor, cost much more than cattle in the outset, none will deny. When good oxen are worth eighty or eighty-five dollars a yoke, a span of horses at the same comparative rate of value will cost from \$180 to \$200. The expense of keeping a span of horses throughout the year, in a condition fit for labor, is much greater than that of keeping oxen in a like state; perhaps if the expense is estimated at one third more annually, it would not be below the truth. The expenditure required to fit out a span of horses, harness, &c., far exceeds that necessary for cattle, certainly four or five times as much. The danger of disabling or killing a horse, is greater than that of injuring an ox. A horse is by far the most delicate animal; slender limbed, more liable to disease, and when attacked more liable to go down than the ox. If any one doubts this, let him endeavor to effect an insurance on a span of horses or a yoke of cattle, and see what the cool calculators of chances think of the difference. And further, if an accident does happen to a horse, that renders him unfit for labor, he is utterly worthless, and the only alternative is to kill him at once. It is true Gen. Gaines testified from his own experience in the Florida campaign, that horse meat was no despicable substitute for beef; yet we think few of our farmers would highly relish a horse steak, even if taken from a four year old. On the contrary, if an accident renders an ox unfit for labor, it rarely materially lessens his value for fattening; and all that is necessary is to convert him into beef, and you obtain his original worth, with the pay for expense and trouble of feeding. On this point, the warmest advocate for horse labor cannot fail to perceive the immense advantage there is on the side of the ox.

We admitted in the beginning of this article, that horses will do more work on a farm than oxen; but the difference is not near so great as many farmers imagine. If the ox is slower, he is more sure, can be more quickly brought to his work, and does not hinder by casting his shoes, or breaking his traces. There is more difference in cattle so far as regards capacity for travel and working quick, than there is among horses. A well fed span of horses, where the work is not beyond their strength, will do about as much as another; while among oxen, you may select the Devon whose walk will nearly equal that of the horse, or some of the commoner varieties, where you are puzzled to tell whether the animal is moving or otherwise. As a general rule, it may fairly be estimated, that a good yoke of cattle will, on the farm, do about two-thirds the work of a span of horses.

In forming our estimate of their comparative value to the farmer, the difference in the expense of raising must not be forgotten. This of course will vary according to the different methods adopted; but one of the best statements we have seen, because founded on actual experiment, is to be found in one of the reports of an Eastern Agricultural Society, carrying out each item of expense incurred in rearing and keeping until their labor would pay their way, which in the horse was estimated at four, and in the ox at three years of age. The cost of raising a horse till four years old, was found to be \$94 36. The expense of a yoke of cattle at the same age, \$65 13--difference in favor of the oxen, \$29 23. It is true the horse when raised may be worth more than the oxen; but we think when the average quality and value of our horses are taken into consideration, there is quite as much probability that the oxen will be worth eighty dollars, as that the horse would reach that sum. Admitting they were each worth that sum, the man who has raised the oxen has made fourteen dollars eighty-seven cents; while the man who has raised the horse, has lost fourteen dollars thirty-six cents by the operation.

The same general rule however will hold good in the raising of animals that experience has proved applicable to the raising of crops on a farm; never to run into one kind to the exclusion of all the rest. Horses, cattle, and sheep, are all necessary to the farmer; and he who thinks to make money by excluding any of these from his farm, will most likely in the end find himself mistaken in his calculations. The point necessary to ascertain is, what proportion of each will, under the circumstances of the farm, be the most profitable, and to act accordingly. The comparative scarcity of cattle, and the multitude of inferior horses, shows that we have erred on the side of horses, to the neglect of cattle; and the prices not less than numbers demonstrate this fact. Animals which are so useful in every respect as cattle or sheep, are rarely found multiplying in any disproportionate degree. When they are not wanted on the farm, or cease to be profitable for their products, or when the dairy or the fleece cease to be an object, the flocks or the herds can be sent to the slaughter house with no loss to the producer; while, as thousands at the present day find to their cost, they have overstocked their farms with horses, which are not wanted for labor, and of which they cannot dispose, except at serious sacrifices.

In Belgium, horses are extensively used on farms, but rarely more than one span is kept; as the rule is there to make one span perform the labor of ploughing, &c. for forty-five or fifty acres, and the horses are kept in a state to perform this labor accordingly. In England, cattle are most commonly used, and for farm purposes the Devon oxen have a decided preference. They walk fast, are good at enduring fatigue, and in general are less liable to suffer from heat, than other breeds. In New England, the ox and the cart still retains the preference on the farm, to the more complicated and expensive apparatus of horses, harness and wagon. In New-York we find the horse useful, and in our grain raising districts indispensable; but the fashion of these districts is too implicitly followed elsewhere; and on farms where a yoke of cattle would be sufficient for every valuable purpose, they are crowded off to make way for a horde of unruly, worthless horses, the plague of their owner's neighbors, and a moth to destroy any farmer's prosperity.

The Green Crop System.

From the "Agricultural Papers" of Agricola, in the Downpatrick Recorder.

"The farmer's life displays in every part,
A moral lesson to the sensual heart."—BLOOMFIELD.

To prevent a long digression in my last paper, I was obliged to assume that, though there are some crops which impoverish the soil very much, there are others "which are more grateful to it, and which instead of impoverishing it, afford a reciprocal advantage, by imparting to it richness." But as, this statement contains the fundamental principle of the important system which I am advocating, it should not be taken on trust; and, accordingly, the object of my present paper is to show, that the green crop system is not founded on a false assumption; but on an *important truth*.—The whole crops of the farmer may be divided into two classes—the grain crops and the green crops. The former are sometimes called *culmiferous* or *straw-bearing*; and the latter, *leguminous*, from their seeds or leaves being of a much larger kind. Clover, beans, turnips, potatoes, &c., are leguminous plants, or belong to the class called green crops. Now, it has been proved, by experiments made for the express purpose of ascertaining, and is, therefore, beyond a doubt, that plants are not nourished by the soil alone in which they grow, but that much of their sustenance is drawn from the atmosphere; of course, they do not derive the same degree of support from either of these causes—some are nourished more by the earth, and others more by the air. Grain crops are of the former kind. As they have but small leaves, and few of them, and thus present but a small surface to the atmosphere, it is plain that little of their nourishment can be derived from it: they must, therefore, be supported almost entirely by the soil. This is particularly the case when the crops have nearly ripened, when the few leaves they have are withered and dead, or have fallen off; they can then draw, perhaps no nourishment from the air, but must be supported almost entirely by the soil. But the fact is not so extensively known as it deserves to be, that, at this period, when the seed is forming, the plants require an extraordinary quantity of nourishment; and hence it is that grain crops are so particularly exhausting to the soil. In proof of this, I may refer with confidence to the experience of any intelligent practical farmer. He knows, that if the grain be allowed to stand uncut after it has ripened, it exhausts the soil exceedingly; but, that if cut green, the impoverishing effects have not been so extensively produced. Now the green crops or leguminous plants, on the contrary, present an extensive surface to the action of the atmosphere, and, therefore, can draw much of their nourishment from it, without requiring to draw so extensively from the soil. A familiar proof of this may be had from the common cabbage. Its numerous broad leaves enable it to draw most of all its nourishment from the atmosphere, and hence it is that cabbages can be preserved for a long time in a fresh state, if cut and hung up in a damp place. House-leek is another plant which has broad succulent leaves, and who does not know that it will grow in the most unfavorable situations? If hoisted on a pole, or laid on a slab of marble, it will flourish most luxuriantly. But this is not all; some plants have been proved to exist,

and thrive, and come to maturity, when nourished by the atmosphere alone—growing in pounded quartz, (a substance resembling flint) and supplied with distilled water, to prevent the presence of the smallest particle of earthly matter!—Another important fact is, that all the seed of a grain crop comes forward at the same time. Whenever it has properly “shot,” the plant stops growing—its seeds begin to form, its leaves wither, its roots cease to act in the ground, and, when cut down, it is dry and hard. The green crops, on the contrary, bear blossoms and seed at the same time; the roots are continually pushing forward in the ground, and the leaves are green and sappy as before, so that the plant never exerts itself to impoverish the soil. Every one knows, for example, that beans and peas may be pulled from the lower part of the stalk, while the top is bearing blossoms and embryo fruit; that one branch of a stalk of clover will be in flower, and another in seed; and that the top of a potato stalk will wave in verdure and bloom, when the crabs and leaves have fallen off the lower part. It may not be out of place to mention here a serious error in which many farmers fall. They allow their rye grass to remain uncut long after it has come to maturity, alledging as a reason, that “unless it is ‘dead ripe,’ it will never do for seed.” They forget that it is cultivated chiefly for the hay, and not for the seed; and that by allowing it to become ripe, they are disappointed of their object, as much of the seed is lost in the necessary operation of saving the hay. Besides, the quantity or the weight of the hay is diminished by the parching and withering it has undergone; its quality is deteriorated, as it is rendered less palatable and less nutritious to cattle; and the fertility of the soil is greatly injured. To prevent these consequences, a small spot should be kept to furnish seed, but all the rest should certainly be cut green, the pasture produced as an aftergrowth would of itself be a sufficient remuneration for the loss of seed. A remarkable difference between the grain crops and green crops, is, that the former tend to bind the ground and harden it, the latter to open and pulverize it. This is partly to be accounted for from the difference of their roots. Those of the one kind being numerous and fibrous, unite the different parts of the soil firmly together, without being large enough to produce such an action as would loosen it; those of the other kind being larger and more of an opening nature, cause an action in the soil, during the process of growing, that reduces it to a soft and mouldy state. Another cause is the difference of their fitness to admit moisture. When dew or rain falls upon a grain crop, nearly ripe, it glides down its hard, dry, bare stalk, and settles on the ground; but as this presents a hard-bound surface, it remains there until the greater part of it is carried off again by the heat of the sun. When it falls on a green crop, it receives a shelter under the broad leaves, and, trickling down the stalk to a soil softened and prepared to receive it, it contributes to moisten it, and render it softer. Of all grain crops, wheat is by far the most severe upon the soil. It is, in the first place, exceedingly binding, and always leaves the ground in a hard state. Then it occupies the ground so long, that it requires an extraordinary degree of nourishment, from its sowing till its reaping; the weight of the grain, besides, requires a strong stalk, and much earthy matter to bring it to perfection. Of green crops, again, potatoes are the most loosening. They sink deep into the soil, and by the spreading of their roots in every direction, and the swelling of numerous bulbs, loosen it most effectually. It is said that a crop of potatoes is more effectual in this respect, than a

good ploughing would be. One thing, however, is certain, that no matter what may be the color of the soil when the potatoes are planted, when they are turned up, their beneficial effects are apparent ; for the soil is uniformly of rich blackish color. If I were asked, which of the various kinds of potatoes is most pulverizing and beneficial to the soil ? I should answer—notwithstanding the foolish prejudices which prevail respecting them—the “ cups,” or “ west reds.” Besides sinking much deeper into the soil, they are more numerous than other kinds, and, therefore, give it a more thorough turning up. Now from these facts, what inference can we draw ? That a wheat crop should be preceded by the most loosening and fertilizing crop that can be had, viz., potatoes. They clean the ground, and, as is evident from the parallel I have drawn, they put it in a state of complete preparation for the wheat. It is absurd, then, to expect that as good crops of wheat will be produced on fallow ground, on which there have been no potatoes. Another conclusion, which is almost self evident from the facts I have stated, is, that a green crop should succeed wheat, to compensate for the injury which the ground has sustained. This shows how utterly ruinous and unreasonable is the practice of taking several oat crops off the ground, immediately after wheat. Instead of nursing the soil, already too much exhausted, the very vitals are torn from it, and then, forsooth, it is permitted to “ resist itself,” until the omnipotence of idleness has completely restored it ! Turnips are very good for the soil, but certainly not as good as potatoes. They derive, perhaps, more of their nourishment from the atmosphere, but their roots do not penetrate so far into the ground to loosen it. They are besides too late of being raised, to admit of being followed by a wheat crop ; but they can be advantageously followed up by barley, which also suits a clean dry soil. Clover, too, is particularly fertilizing to the soil in which it is produced. Its lower leaves becoming withered, fall off, and rot about its roots, and thus produce a valuable manure—decayed vegetable matter. Its slimy succulent nature keeps the ground always in a state of fertility, and its numerous dense leaves are particularly adapted for retaining the moisture that has been deposited by rains and dews. Who has not observed the rich unctuous appearance of ground where clover has been cut shortly after the deposition of the moisture ? I hope, and believe, that I have now proved my assertion, to the satisfaction of all who may honor this paper with their perusal. Let it be remembered, too, that in referring to the reciprocal advantages which arise from a proper rotation of crops, I have not once alluded to manures. If proper changes from grain crops to green crops, and *vice versa*, would almost of themselves suffice to keep the land “ in heart,” what might we not expect, when in addition to this, one fourth of it would be well manured annually ? This part of the subject brings me now to the important question already noticed. How is the manure to be produced ?

AGRICOLA.

Questions on Plaster of Paris propounded; by Mr. Jeffreys.

[FROM THE NEW-ENGLAND FARMER.]

[The following are the queries to which Col. Taylor has annexed answers on Plaster of Paris.]

What quantity to the acre have you generally used?

On what soils does the plaster succeed best?

In what way is it best applied to the soil—with or without ploughing—with or without other manure?

Have you repeated the application of it? At what intervals, and with what effect?

To what kind of grain, succulent and leguminous crops, can it be beneficially applied? and in what way is it best applied to them?

To what kind of grasses can it be beneficially applied? And in what way is it best applied to them?

What has been the increased product per acre, of grain and grass crops, by means of the plaster alone?

What is the result of the experiment which you have made of setting aside two hundred acres, half to lie uncultivated and ungrazed, and the whole to receive an annual dressing of one bushel of plaster to the acre?*

COL. TAYLOR'S REPLY.

Port Royal, March 4, 1818.

Dear Sir,—To your questions of the 4th inst., I reply:

1. I sow from three pecks to one bushel of plaster upon an acre.
2. It succeeds upon all soils to which I have applied it; those requiring to be drained, excepted.
3. Sown on clover in the spring, it benefits it considerably. Used in any other mode, I plough it in. But I have even discontinued the first practice, from observing that when plaster is sown and ploughed in with wheat in the fall, a top dressing to the subsequent clover is of

* For fear this experiment may not be understood by the questions, I will give it more fully in Col. Taylor's own words:

"I have set aside 200 acres, (divided into two fields) half to be cultivated in corn yearly, half to lie uncultivated and ungrazed, and the whole to receive an annual dressing of one bushel of plaster to the acre. The repetition of the culture being too quick for a perennial plant, I use the bird foot clover, as we commonly call it, to raise clothing for the land, having found that the plaster operated as powerfully on that as on red clover. One field produces a crop of corn, and the other being enclosed, receives a crop of ungrazed vegetable matter. The succeeding year the ungrazed field is taxed with the crop of corn, and the corn field fed with the ungrazed vegetable. In one, the plaster is sown upon the bird-foot clover in March or April, and in the other ploughed in at its fallow. The object of the experiment is to ascertain whether an annual bushel of plaster to an acre, combined with a biennial relinquishment to the soil of its natural vegetable product, will enable it to be severely (cropt) every other year without impoverishment, or with an addition to its fertility. The first effect would suffice to check an evil, every where demonstrating the wretched state of our agriculture; the second would be a cheap and expeditious mode of improving the soil, even where the state of agriculture is good."

W. G. JEFFREYS.

little or no use; and from thinking that the effect of the plaster sooner ceases as a top dressing, than when ploughed in. The best ways, I think, of using it, are in the spring, upon the long manure of the preceding winter, to be ploughed in with it—upon well covered fields to be sown immediately before they are fallowed—in rolling it very wet with seed-corn, bushel to bushel, and in mixing it with seed wheat so as to let the wheat divide in sowing, in such a quantity, as that the land shall receive not less than three pecks to an acre. The latter is chiefly for the sake of the succeeding clover. The wheat is benefited in a small degree, but it prevents embezzlement of the seed.

4. I have had a small mill exclusively for grinding plaster during 20 years. In that period I have used several hundred tons, and tried a great variety of experiments, using it every year to a considerable extent. I think it a valuable ally of, but by no means a substitute for manure. That there should be intervals of two, three, or four years, between applying it broad-cast to the same land. That its effect is graduated by the quantity of vegetable matter upon which it is sown. That upon close, grazed land, it does but little good at first, and repeated, would become pernicious; and that it must be united either with the long manure of the winter, or the ungrazed vegetable cover produced in summer.

5. Corn mixed with plaster is sometimes highly benefited, and almost unexpectedly in a degree, depending chiefly on its alliance with vegetable matter, and occasionally upon the seasons. Its effect upon wheat is before stated. But all crops are ultimately improved by its gradual improvement of the land, including those upon which its effect is not immediately visible. The small crops, vegetable, succulent or culmiferous, are often benefited by a mixture with plaster when planted, measure for measure.

6. I have satisfied myself that plaster ought so be used to benefit all kinds of grasses, in the modes explained, and that it ought not to be sown as a top dressing. By improving the land, it benefits all kinds of grasses.

7. It is impossible to say how far the plaster, valued exclusively of its vegetable ally, may have increased the crops of grain. Used a top dressing to clover, (red,) on land never before plastered, I have often had that grass increased four-fold to a line, dividing it from similar land and clover. Spaces left unplastered across large fields, when sown in wheat, have remained visible during the whole season of rest, by the inferiority in luxuriance of a great variety of natural grasses and weeds. The 200 acres you mentioned, have never received any manure, and the corn-stalks have been taken off. But they have been completely secured against grazing. They now produce three-fold more corn than when the experiment commenced. The rest of my farm, having had the manure, will produce five-fold more corn it could 20 years ago. The casualties attending wheat, render that a precarious criterion of improvement.

Provender and Mathematics.

[FROM THE MAINE FARMER.]

There is nothing in this world like calculation. The Southron may *reckon*, and the Yankee may *guess*, but after all, if they would know how they are going, and where they are going, and what they are about, they must make a fair *calculation*.

In proportion as they calculate right, or exact, so will they be enabled to get along well or ill. The common rules of arithmetic will generally give the true results if properly applied, that is, if they have the right data to start upon. But what we were about to say more particularly is this—there is a rule in our Arithmetics not much used, and yet one which may be often used to great advantage. It is called “Allegation,” and the object of it is to give a few rules whereby different substances of different prices or qualities may be combined together in such way and manner as required to bring about a certain required result. It occurred to us the other day that farmers might use it to very good advantage. We met with an individual, with the money in his pocket, in pursuit of some peas and oats to fatten his hog. Why do you not purchase corn? It is too dear. Why do you not give him oat-meal? I have plenty of oats, said he, but they have not “heart” enough in them to fatten hogs. I should be willing to give 67 cts. per bushel for peas and oats, if I could find them “handy.” Well, if you can’t find them “handy,” buy some corn and mix it with your oats, until you get a mixture worth 67 cts. per bushel. How much corn, said we to him, at one dollar per bushel, must you buy to mix with your oats at 34 cts., to make the mixture worth 67 cts. per bushel? Fact, said he, looking very grave, I used to do such *sums* at school, but I haven’t thought of them since. Probably you used to do it thus:

$$67 \left\{ \begin{array}{l} 34 \text{ — } 33 \text{ Oats,} \\ 100 \text{ — } 33 \text{ Corn,} \end{array} \right. \quad \text{taking 34 from 67 leaves}$$

you 33, which you put next the corn, and 67 from 100 leaves 33, which you put next the oats. Thus you see at the prices which you have put down, you must buy thirty three bushels of each; or if your oats are worth 40 cts. and corn 120 cts., it will be thus—

$$67 \left\{ \begin{array}{l} 40 \text{ — } 53 \text{ Oats,} \\ 120 \text{ — } 27 \text{ Corn.} \end{array} \right.$$

Very true, said he, but that will make more provender than I want. All you have to do then is to vary your mode of calculation. If you have but ten bushels of oats to spare, and they are worth 40 cts., how much corn must you mix with them to make the mixture worth 67 cts.?

$$67 \left\{ \begin{array}{l} 40 \text{ — } 53 \text{ Oats,} \\ 120 \text{ — } 27 \text{ Corn.} \end{array} \right. \quad \text{Then say, as 53 is to 10, so}$$

is 27 to the required number—

$$53 : 10 :: 27$$

10 ans.

$$53 \overline{) 270} \begin{array}{r} 5 \\ 265 \\ \hline 5 \end{array} \quad \frac{5}{53} \text{ five bushels and a little more than one-tenth}$$

of another bushel. The querist bought the corn—mixed it with his oats—and is now fattening his pig with what he calls his *mathematical* provender; and we hope he will send us a piece of his pork by way of fee for *cyphering* for him. The proportion of corn to the oats is the same as the general proportion of peas to oats; though the corn may not be quite so nutritive as the peas. We are inclined to believe the mixture better than all corn.

Make your Hogs Work.

[FROM THE FARMER'S CABINET.]

Much has been said in the agricultural publications of the day, and especially in the *New England Farmer*, on the subject of manure. It is one that claims the attention of every farmer—of every one especially who would excel in the honorable art of husbandry. It may not be amiss at this season, to recapitulate some of the observations on this point, contained in the work referred to. A highly valuable manure, with a little attention, may be obtained from swine—the following is the method: “I usually keep and fatten, says the writer, four hogs in a year; these I keep confined in a yard twenty feet square, with a warm and convenient shed attached thereto as a shelter for them during the night time, and in cold and stormy weather. Into this yard he placed the scrapings of ditches, the dirt that is continually in and about buildings—this became mixed with the straw with which they were littered. The whole was cleared out as often as it was judged expedient. The quantity and quality of the manure would be greatly increased, if the pen was supplied with weeds, (an excellent way this of turning these noxious plants to good account) and in the absence of weeds, which, by the way, is not very common, even on our best cultivated farms, resort may be had to the woods—here the farmer has an abundance of weeds and other rubbish that may be used to great advantage. The writer states that he has, in this way, with four hogs, made from twenty-five to thirty loads of manure in a year; which, in his judgment, answers a more valuable purpose than that from the stable or barn-yard. He says, “The last spring I planted a field, containing two acres, with corn. One half of the piece was manured in the hill with ten loads from the hog-pen, the other half with the same quantity of the best manure the barn-yard afforded. A visible difference was to be seen in the growth of the corn through the season, and at the time of harvest the difference was still more discernable. That part manured from the hog-pen produced ears generally much larger than that manured from the barn-yard, a great proportion of the stalks bearing two, and many of them three ears each. Having harvested and measured my corn, I found the result to be as follows: the produce of the part manured from the hog-pen, fifty bushels, while that of the other part was but forty-two bushels, making a difference of eight bushels in the former. I have lately taken twenty-eight loads of strong manure from my hog-yard, which has been collected the past year, and which will be a sufficient quantity to manure two and a half acres in the hill; and should the difference be as great in its favor the next as it has been this year, the extra produce will more than repay the whole expense of making the manure.”

Manures may be divided into two classes. The one is called animal and vegetable, or putrescent manures. They consist of decayed and decaying animal and vegetable substances. The other class is denominated fossil manures. The last mentioned do not properly constitute the food of plants, although they enter into the composition of vegetables in minute quantities. Fossil manures stimulate plants, and cause them to take food faster than they otherwise would. They are like what medical men call *condiments*, and answer the same purpose as respects the economy of vegetables, which salt, pepper, spices, &c. effect as regards the animal economy.

Pine Lands and Pine Lumber.

[FROM THE ONEIDA (N. Y.) WHIG.]

There is, perhaps, no subject in which the public are more deeply interested, or in proportion to that interest, on which it is less informed, than of the sources, quantity, and probable duration of the supply of white pine lumber. It is no uncommon occurrence to hear merchants and business men predict the rise or fall of the various articles of merchandise and produce in the range of their business, and we are aware that they predicate the opinions they advance upon the knowledge they have acquired as to the means and extent of the supply, and the amount of the demand. But who is there who troubles himself to inquire how much pine timber there is in the United States? how long it will last? what is the cause of its regular and rapid advance in price? and will it continue to advance, or will it diminish in value in years to come? We have been led to these remarks by some facts communicated to us by a friend who has investigated the subject, and on whose statements we can rely.

It is known, we presume, to most persons, that white or *pumpkin pine* cannot be produced or grown, as the under brush or second growth of pine forests is always of a different species of wood. Thus we can see at a glance, that the county or State which is once stripped of its valuable timber, can never again see its soil clothed with the same. With this fact before us, together with the knowledge of the extent of the annual consumption of this article, it can be no very difficult matter to arrive at a pretty accurate conclusion as to the *time* which the forests of the United States will supply the demands of the country. A few facts will show that we are not so well furnished as is generally supposed.

In all the States and Territories connected with the Union, there are substantially but three States which have a *surplus* of white pine to supply the enormous and increasing demand which is yearly made by the other States and Territories. These are, New-York, Pennsylvania and Maine. The latter (Maine) with her *twenty-five hundred saw mills*, can hardly supply the New England States, and it is left for New-York and Pennsylvania to furnish the *pine lumber* for the great valley of the Mississippi, after deducting what is needed for the consumption of four millions of enterprising inhabitants within their own borders. We speak of course in general terms and in round numbers, and do not mean to say that many of the States cannot supply their own wants to some extent for several years.

Allowing these statements to be true, we are now prepared for the question,

How long will the white pine forests in these States supply the demand?

It has been ascertained beyond a doubt, that there were floated on our canals, the Hudson, Mississippi, Susquehanna and Delaware rivers, during the last year, nearly *six hundred and fifty millions* of square feet of pine lumber! To supply this quantity, over sixty-five thousand acres of *good* pine lands have been stripped of every tree! If there are seven hundred thousand acres, even at this rate, without any increase, it will last only some ten or eleven years; and from facts that have been gathered on this subject, we venture to say that there is not white pine enough in the United States to supply the present consumption fifteen years! If any one can controvert this conclusion by facts, we should be glad to hear them. Ten years since, the pine lumber on the Alleghany and Susquehanna was from four to eight dollars a thousand feet; it is now from *ten to eighteen*, and large contracts for the latter price were made last month for lumber, which is now on its way to Natchez and New-Orleans, the markets for which it was purchased. When pine lumber is transported five thousand miles on the Mississippi and its tributaries, and pays large profits, can there be a supply nearer? With these hints we leave the subject for the present.

Hedges—Osage Orange.

[FROM THE FARMER'S REGISTER.]

It is gratifying to be assured, that in one of our native plants, namely, the *maclura* or Osage organ, we are likely to realize this desirable object. The *maclura* is a deciduous tree, growing indigenously in Arkansas and Louisiana—is perfectly hardy in this latitude, and even as far north as Boston. For a number of years it has been cultivated in the grounds of a few private gentlemen, and in some of the large nurseries. It is only recently, however, that its value has been appreciated, or any pains taken to propagate it extensively. In its native *habitat*, it attains to the size of a tree of the second or third class; but in this latitude, its altitude is very moderate, seldom rising to the height of fifteen feet. Its great merit consists in the spreading manner of its growth, the denseness of its branches, and the armature with which they are furnished. Planted in hedge-rows, the *maclura* would never become unmanageable on account of its size—at the same time, its growth is sufficiently vigorous to make a fence in three, four, or at most, five years, from the seed. It may be asserted with safety, that on land of tolerable fertility, the labor and expense of perfecting a system of hedges, would not be greater than to keep our ordinary enclosures in good order, for the time required to construct them. When completed, this heavy item in every farmer's account would thenceforth be expunged.

The *maclura* is readily raised from the seed. Unlike those of the thorn, they require no preparation—on the contrary, they vegetate with certainty in two or three weeks after planting. Under tolerable care, the seedlings will grow two foot or more in height the first season; after which, they are fit to be removed from the nursery rows to the place designed for the hedge. I raised a number of plants the

past year from seeds, the produce of a tree growing in my garden, now eight or nine years old.

For an individual to engage in the business in earnest, it would be best for him to obtain the seed from the South-West, rather than to purchase the plants from a nurseryman. A few dollars would procure enough of the former, and pay all the expenses of transportation, to set a long line of hedge. The preferable mode would be to have them brought in the berries, from which they might afterwards be picked without much trouble. Fifty berries would yield at least a pound of seed, and a pound contains from eight to ten thousand grains. It is the practice to place the sets from twelve to fifteen inches apart, in a single row. These facts will enable any person to form a correct judgment of the number necessary to plant any given length of hedge.

But it is not to be expected, whatever may be the adaptation of any plant to the purpose of hedging, that it will, under a long time, be brought into general use. The most palpable improvements are slow in being adopted. A considerable portion of our country is moreover too much impoverished to admit of the successful rearing of hedges. They belong eminently to a state of cultivation, where taste and industry are measurably combined. But if we have worn-out fields, we have also fine districts of country, where their pleasing effects, as well as utility, would be most manifest. What an air of neatness and improvement they would impart to the finely cultivated farms on James river, both above and below Richmond, to those also on the Rappahannock, the Roanoke, and in many other sections of the State that might be designated with equal propriety. In most of these places, the lands are so valuable, that there is now a great deficiency of timber; and, from necessity, they are therefore almost exclusively devoted to grain. Along the lines of canals also, where permanent fences are obliged to be maintained, there would be a great advantage in planting hedges at once. The idea that when fairly established they will never need removal, would inspire a degree of security which cannot be felt by those persons who are in the habit of patching up decayed fences, and calculating the value of a rail in resisting the depredations of stock.

Goochland county, Va.

PART III.

MISCELLANEOUS INTELLIGENCE.

Measuring Potatoes.—A fact which came under our observation last spring, while buying our seed potatoes, has convinced us that it would greatly tend to promote the cause of justice between buyer and seller, as well as advance the interests of potato growers, if they were sold by weight. We engaged 35 bushels from a dealer, out of a lot of 55 that he had bought. Prior to our sending for them, the dealer told us he had sold 40 bushels, and wished us to take the balance; upon our remonstrating against his having sold a portion engaged by us, he laughed, and said there was more left than we had engaged, and much to our surprise, the residue measured 37 1-2 bushels, making the 55 bought by the dealer actually contain 77 1-2 bushels. On expressing our surprise at these facts, he stated that he had bought the potatoes in bags, and that they contained more than the estimate of their contents, which he had at the request of the consignee, fixed himself. Here was a clear loss in measure to the owner of these potatoes, of 22 1-2 bushels; whereas, had the quantity been ascertained by weight, the judgment of an interested purchaser could have been dispensed with, and justice to the farmer would have been done. We deem it our duty to lay this statement of facts before our agricultural readers, because we honestly believe that great advantage would arise, were the measure of potatoes ascertained by weight, instead of the loose manner of measuring in baskets, bags, and half bushels.—*Balt. Far.*

Efficacy of Cotton in preserving Fruit.—We have been informed, by a gentleman who has had practical proof of its success, of a new mode of keeping fruits fresh for the table, as grapes, plums, &c., a long time after they have been gathered. It is simply to alternate them in layers with cotton batting, in clean stone jars, and to place them in a chamber secure from frost. A servant in the family of Wm. Morey, Union Village, Washington county, about to visit her friends, secured a quantity of plums in this way, to preserve them until her return. They were found to have kept in excellent condition, long after the fruit had disappeared in the garden. From the hint thus afforded, Mr. Morey, Mr. Holmes, and one or two neighbors, laid down grapes in this manner last fall, and they enjoyed the luxury of fresh fine fruit through the winter, until the early part of March.—*Cultivator.*

The Leaves of Mangel Wurtzel should not be pulled.—At Hohenheim an experiment has been made the past summer, to ascertain comparatively the best plan to be pursued with the cultivation of Mangel Wurtzel—whether it was more profitable to pluck off the leaves about a month previous to the clearing the roots from the ground, or allowing them to retain their leafy honors until the period of their being taken up; and the following is the result of two equal portions of a field on which the system were tried:

On the 11th October, by leaves,	756 lbs.
5th November, ditto at time of securing the roots,	272
Ditto weight of roots.	4472
Total,	5500
The other portion of the field yielded, at the time of securing the roots,	
5th of November, by leaves,	894 lbs.
Ditto weight of roots,	4948
	5842

On that moiety of the field where the roots had been untouched, there was a diminution in the produce of leaves of 134 lbs., but an increase of 476 lbs. in the roots; and even supposing that the leaves have equally nutritious properties with that of the roots, yet there is a superiority in favor of the system of permitting the roots to come to maturity before depriving it of leaves of 342 lbs., or about six per cent.—*Farmer's Mag.*

Advice to Mulberry Growers.—To persons who may live remove from marts where the *Morus multicaulis* and other varieties of the mulberry are sold, we would respectfully suggest, that in every case where trees are to be transported a hundred miles and upwards, that it would be better to make the purchase in the fall, soon after the dropping of the foliage, than to delay it until the ensuing spring, for the following reasons, viz.: The mulberry is a tree very tenacious of life, and if kept buried from 9 to 12 inches below the surface, would be just as fresh next spring, after being under ground all the fall and winter, as when first taken up out of the ground. It can be removed to any distance, by wagon, boat, or other medium of transportation, from one extreme of our country to the other, without the least injury being done to its vegetating powers. If purchased in the fall, all the proprietor would have to do on the arrival of his trees at home, would be to take them out of the package, and bury them to the depth mentioned above, in the garden or yard. Thus put away, they would remain perfectly secure until spring, when on its first opening, as soon as the frost should be out of the ground, they could be transplanted, and have the *full benefit of the entire season of growing*. Not so, if purchases are delayed until spring, as the delay of transportation, and the numerous other incidental impediments, would come in to subtract from the time of growing. As the culture of the mulberry is, in our opinion, destined to become, indeed has already become, an important branch of husbandry in many parts of our country, as the spirit is diffusing itself in almost every section of our vast limits, as our people are neither indifferent to their interests nor deficient in capacity to discover them; as there is certainly no more profitable occupation known to the husbandman, nor any offering more inducements to its pursuit, we have felt it our duty thus early to give this advice, and we do it the more readily, as the conclusion to which we have come, is the result of experience, and therefore the more valuable.—*Far. & Gar.*

The Northampton Silk Company has succeeded remarkably well in the manufacture of sewing silk. The lustre, and smoothness, and delicacy of the thread, and the fineness of its texture, is not surpassed by the best Italian, so say competent judges, such as the ladies, tailors, and others, who use it. Some specimens are now exhibiting at the fair in Boston. The manufacture of this article will constitute the chief branch of the business in this town. It is now made in large quantities at the establishment of the Northampton Silk Company, and the limited accommodations they have, prevent their immensely increasing the amount. The great factory building in progress last spring, was suspended from the pressure of the times, but the work will probably be resumed this autumn. The means for the manufacture of silk fabrics and sewing silk, having been enlarged, the next step is to procure the raw material. It cannot be bought for any price in this vicinity. The quantity raised is as yet so limited that it is but a "drop in the bucket," to the amount they want to use. Consequently they are compelled to resort to a foreign market for what ought to be produced in our own vicinity. Thousands of dollars have already been sent to Italy and Bengal and China from this town, which would have been distributed among the farming interest, had they but prepared themselves with a few dozen of mulberry trees. From that source, every farmer could have furnished his quota of the raw material, direct from the silk-worm. We want to see every farmer have this appendage to his establishment, from which the labors of his children for a few hours each day for six weeks in the year, would add with but little toil, one or two hundred dollars annually to his income. What would be said should our manufacturers send abroad for their wool, or the Hadley and Hatfield folks depend upon other people for their broom brush? And yet the Silk Factory in this town is compelled to rely upon the foreign market for the raw material.—*Northampton Courier.*

Parch half a pint of rice until it is brown,—then boil it as rice is usually done. Eat slowly, and it will stop the most alarming diarrhœa.

Communicated for the Southern Agriculturist.

Monthly Calendar of Horticulture, &c.

FOR JANUARY.

We would not through choice commence giving a Gardener's Calendar in January, inasmuch as it is rather the middle than the commencement of a season, in consequence of which, directions have to be frequently repeated or references made to what is not yet published. Nevertheless, that our readers may have a Calendar for the entire year, we commence with January, as it is the commencement of our volume.

Peas.—The first crops of peas ought to have been sown as early as November, and successional ones in December. Should none have been sown, then you may still sow them. We would prefer the early varieties, such as the Bishop's Dwarf, (which require no sticks,) Landreth's Early, Early Washington, Early frame, &c. The Dwarf Marrowfat, (which we consider the best pea grown, but not always to be obtained genuine) will succeed these, and the Green Imperial is still a little later, but the late peas do not so well now as earlier, for when the hot and dry weather of May comes on, they are apt to mildew and produce but little. Still, if the season is cool and moist, you may obtain good crops, and if fond of this vegetable, and there be room sufficient for the other crops, you may plant some of the late varieties. Those which were sown in former months, should be frequently hoed, and have sticks stuck along the rows to support them as soon as they are six inches high.

Windsor Beans.—These and the Mazagon bean may be planted during this month, in rows four feet apart. They are a coarse vegetable, and not much sought after. As they, however, come in at a season when there are not many vegetables, they prove acceptable to some palates.

Beets, Carrots, Parsnips and Salsify.—A small quantity of each of these may be sown. The beds should be well manured with rotten manure, and turned up a full spade deep, and then laid off into beds four feet wide, and the seed sown in rows twelve inches apart. It is much the best plan to manure the ground intended for these crops, very highly, some time previous, even long enough to have taken a crop from it. The reason for this is, that the beauty of these roots consists in being long and straight, without laterals, or as the gardeners call them, "fingers." Should fresh manure be used, the roots are very apt to be diverted from their course, and instead of one fine root, you will frequently have a large top with numerous "fingers." The ground having been manured highly for a previous crop, there will be no lumps of manure to obstruct or draw aside the main roots in their descent.

Turnips—Kohl Rabbi.—A few of these may also be sown now, on beds prepared as above—the rows should be from 14 to 18 inches, and the plants thinned out early to 6 inches. The Kohl Rabbi should be thinned out, so as to leave the plants 9 inches apart—12 inches would be preferable. The plants thus thinned out may be transplanted to other places, as they take as readily as cabbage plants. *All seeds sown at this season, should be protected by having a little hay thrown over them in very cold weather, or they will be killed, being extremely tender when they are germinating.*

Cabbages.—This is a very good time to sow cabbage seeds. We would prefer the Early Emperor. It is to be preferred to the Early York, being more delicate, and fully as early—it is also fully as large. These seeds are not often imported by our seedsmen, owing no doubt to the little demand for them, for their excellent qualities are known to but few. We however strongly recommend them to our readers, confident, that if they can procure *genuine seeds*, they will prefer them to all others. The Early York, the Sugar Loaf, and Battersea, may also be now sown. We would not recommend many of the two latter, as they will rarely head

before the season arrives for the depredation of the worms, when few cabbages are worth having. If you have any plants remaining from seeds sown in the fall, you may now set them out.

Cauliflowers and Brocoli.—These vegetables require to be protected from the severe weather which we frequently have in this and the succeeding month,—this may be afforded them by collecting the leaves together, and binding bands of hay around them. They should in mild weather have the earth stirred between the plants, and some hauled up around their stems.

Spinage.—If you can obtain European seed, you may continue to sow spinage, and we would recommend the Broad-leaved and Flanders—the latter is a very superior variety. If you cannot obtain European seeds, and still wish to have this vegetable, you must sow a small quantity every fortnight, or three weeks, for it soon runs to seed in the spring,—plants from European seeds do not.

Lettuce.—Sow in a sheltered spot, a few lettuce seeds—we prefer the Imperial Cabbage. There are however a great many varieties, most of which are good.

Onions, Leeks, Eschallots.—These having been planted in November or December, will require to be frequently worked among.

Radishes.—You may sow both the long and turnip-rooted varieties. These may generally be sown between rows of other vegetables, as they come off so early as not to interfere with them. They should be sown every three weeks, as they do not last longer than that period, fit for the table. As the season advances, they ought to be sown every fortnight.

Celery.—Embrace every opportunity to continue to earth up your celery. It should only be done in dry weather.

Endive.—Tie up the leaves of your endive, in order to blanch them, and with the hoe draw some earth around.

Horse Radish.—This vegetable, so much used in England as an accompaniment to roast beef, is comparatively but seldom seen on our tables. It is easily cultivated, and should be in more general use. Its propagation and culture is easy, for after the roots have once taken, they require but little care. They are propagated either by slips from the old crowns, or cuttings of the roots of about two or three inches in length. Plant them in rows 18 inches apart, a foot deep, and about 6 inches from each other. They may be used the following autumn, but it is best to let them remain undisturbed for eighteen months or two years.

See 111 **Irish Potatoes.**—There is some little risk attending the planting of Irish potatoes in the early part of this month, but towards the latter part, you may venture with safety. Having the ground well dug up, lay it off into rows four feet apart, making deep trenches, into which spread a large quantity of fresh stable manure, if you have it. On this, place the sets of potatoes, (each set having three or four eyes) at about 8 inches apart from each other—cover these over, drawing up the earth into a ridge. They should be covered at least 6 or 8 inches deep, and be earthed up as the shoots advance in their growth. Many interesting experiments have been made on growing them near the surface of the ground, without afterwards earthing them up, or giving them any subsequent culture, but merely covering the whole surface over with straw, &c. Of this plan of treatment, we shall say more in our next.

Asparagus.—If the beds were not dressed last fall, they ought not to be neglected a moment longer. Have a large quantity of manure spread over the beds and forked in, taking especial care not to injure the crowns of the roots.

Artichokes.—These should also have been attended to last autumn, but if neglected, you must at once remove the supernumerary suckers, leaving not more than three to each set. Have plenty of good manure placed around the roots, and the earth well stirred among them. The off-sets will do to form new plantations with.

Parsley.—This is a very good time to sow parsley. We recommend the curled variety.